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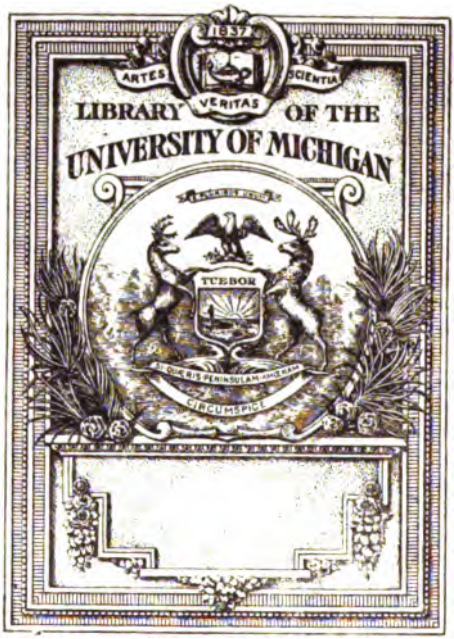

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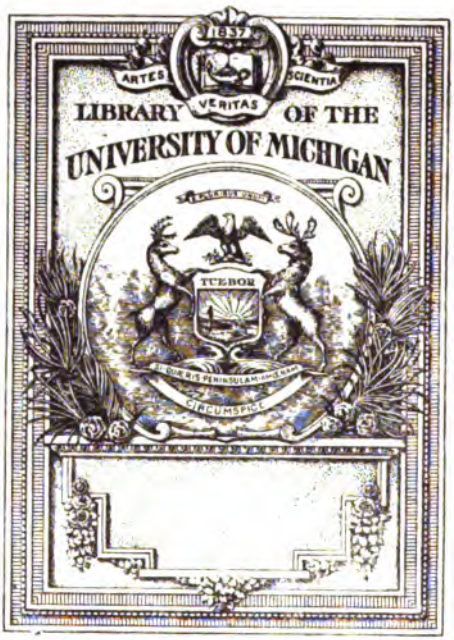

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THE

UNIVERSITY STUDIES

OF THE

UNIVERSITY OF NEBRASKA

VOLUME XIV

LINCOLN
PUBLISHED BY THE UNIVERSITY
1914

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VOL. XIV JANUARY 1914 No. 1

UNIVERSITY STUDIES

PUBLISHED BY THE UNIVERSITY OF NEBRASKA

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LINCOLN, NEBRASKA

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UNIVERSITY STUDIES

VOL. XIV *JANUARY 1914* No. 1

I.—STUDIES OF NORTH AMERICAN BEES

II. FAMILY STELIDIDAE

BY MYRON HARMON SWENK

The present paper is the second of the series proposed in a previous contribution on the family Nomadidae (*antea*, XII, pp. 1–113), and aims to tabulate and list the bees of the family Stelididae occurring in Nebraska, together with annotations concerning their distribution, comparative abundance and season of flight. As in the previous study, records and descriptions of specimens from outside Nebraska before the writer are included where these seem to add anything to our knowledge of the species concerned.

MATERIAL

In the studies upon which this paper is based over four hundred specimens have been examined and determined. From the state of Nebraska fifteen species and subspecies are recorded, and of these three species are apparently new. From outside the state seven species and three subspecies are described as new, making a total of thirteen new forms here described as new.

CLASSIFICATION OF STELIDIDAE

The family Stelididae is here used in the sense proposed by Robertson (*Canadian Entomologist*, XXXVI, p. 37 and p. 40), but only the subfamilies Stelidinae (=Anthidiinae Robertson, part) and Anthidiinae are represented within our limits. The group is the same as Ashmead's subfamily Stelidinae of his family

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Stelidae (*Transactions American Entomological Society*, XXVI, p. 79), in which family he also included the subfamily Coelioxynae which is referred by the writer to Megachilidae. Cockerell refers both the Stelidinae and Anthidiinae, as here considered, as subfamilies of Megachilidae along with the subfamilies Megachilinae, Osmiinae, Coelioxynae and Dioxynae (*University of Colorado Studies*, VII, pp. 184–185), but the writer would restrict the Megachilidae to the four last named subfamilies.

The subfamily Stelidinae is composed of the parasitic bees referable to the old genus *Stelis*. Our American forms of this family fall into two groups, based on the venation, in one of which the second submarginal cell receives both recurrent nervures while in the other the second recurrent nervure is interstitial with or received beyond the second transverse cubital nervure. The first type of venation is confined to Nearctic species, while the second type is common to Palæarctic and some Nearctic species. The chief objection to its employment as a generic character is that in some species, which usually have the second recurrent nervure before the second transverse cubital nervure, specimens occur in which these nervures are opposite each other (*e. g., foederalis*), while other species have these nervures either opposite or the second recurrent nervure beyond the second transverse cubital nervure (*e. g., lateralis*), so that there is no marked defining line between the two groups, and they had apparently better stand as subgenera. The first type of venation occurs in Robertson's alleged genus *Stelidium* (type *S. trypetinum*), and characterized Ashmead's genus *Melanostelis* (*Psyche*, VIII, p. 283, Nov. 1898), the type of which, *M. betheli* Ashmead, is a synonym of *Stelis rubi* Ckll. (*Entomologist*, July 1898, pp. 167–168). In 1888 Provancher proposed the monobasic genus *Chelynia* (*Additions a la faune Hyménopterologique du Canada*, p. 321), and Titus, after examining Provancher's type of *Chelynia labiata*, found that it was the same as Cresson's species *nitida*, which he doubtfully referred to *Stelis* (*Transactions American Entomological Society*, VII, pp. 92–93, 1878). *S. nitida* Cresson and *S. rubi* Ckll. both have the first type of venation and are probably congeneric, although *rubi* shows a unique form of pygidium

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in the female. Hence *Melanostelis* Ashmead is to be regarded as a synonym of *Chelynia* Provancher, the latter name having ten years priority, and the group is here recognized as a subgenus. The Nearctic species having the second type of venation have been commonly referred to the genus *Stelis*. This genus was described by Panzer in 1806 (*Kritische Revision der Insectenfaune Deutchlands,* II, p. 246), and the only included species was *S. atterima,* which is thus necessarily the type. But *S. atterima,* as well as several Palæarctic species, have the mesoscutellum bearing lateral teeth behind, which are lacking in our Nearctic species, even when possessing the second type of venation, hence the two are probably not subgenerically identical. Robertson has proposed the genus *Microstelis,* with *S. lateralis* as the type, and this name might well be employed as a subgeneric group for the Nearctic species normally having the second recurrent nervure opposite or beyond the second transverse cubital nervure.

The subfamily Anthidiinae is composed within our limits of the bees of the genera *Anthidium* and *Dianthidium*. *Anthidium* was proposed by Fabricius in 1804 (*Systema Piezatorum,* p. 364) and in 1810 Latreille designated *A. manicatum* (L.), the first species included under the genus by Fabricius, as the type (*Considérations générales sur l'ordre naturel des crustacés, arachnides et insectes,* p. 439). *Dianthidium* was originally proposed by Cockerell as a subgenus of *Anthidium* (*Annals and Magazine of Natural History,* series 7, V, pp. 412–413), but it soon became evident that the group was well worthy of generic standing. Its type is *D. sayi,* which is a name proposed by Cockerell for the *Megachile interrupta* of Say, 1824, referred to *Anthidium* in 1854 by F. Smith where it became a homonym of *A. interruptum* of Fabricius, 1804, and for the *A. curvatum* of Cresson and subsequent authors up to 1907 (not *A. curvatum* Smith, 1854). In addition to their structural differences, the nesting habits of *Anthidium* and *Dianthidium* are very different, the species of the former genus nesting in burrows and lining the nest with cottony material, while those of the latter genus make resinous nests on rocks, sides of cliffs, etc.

Heteranthidium Ckll. (*Entomological News,* XV, p. 292) was

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proposed as a genus for its type species, *Anthidium dorsale* Lepeletier, for while it agrees with *Dianthidium* in the possession of pulvilli (though smaller than typical), it almost always has the venation of *Anthidium,* the second recurrent nervure being usually received opposite the second transverse cubital nervure instead of well beyond it as in typical *Dianthidium.* Later, Cockerell referred *A. occidentale* Cresson and *A. zebratum* Cresson to *Heteranthidium* (*ibid.,* XX, p. 261), and still later *A. chippewaense* Graenicher (*Proceedings U. S. National Museum,* XXXIX, p. 643) was also referred to it. A critical examination of fifty-eight specimens of *zebratum* from Nebraska and South Dakota shows that while the great majority have the second recurrent nervure perfectly opposite the second transverse cubital nervure, an occasional specimen has it slightly but distinctly beyond that nervure, practically as far as in some species referred to *Dianthidium.* Hence the writer would for the present consider *Heteranthidium* as a subgenus of *Dianthidium,* owing to the insufficiency of the venation characters as a generic criterion, though there seem to be differences in the palpi and dentition of the mandibles which, if constant, may make it ultimately desirable to recognize *Heteranthidium* as a distinct genus.

Anthidiellum Ckll. (*Bulletin of the Southern California Academy of Sciences,* III, p. 3) is a well defined group of species of the general appearance of the type species, the European *D. strigatum* (Panzer), and deserves recognition as a subgenus, as proposed by Cockerell.

Family STELIDIDAE

KEY TO THE NEBRASKA SUBFAMILIES

Scopa absent in both sexes; maxillary palpi one or two jointed, short, bare; mandibles 3-dentate; ornamentation usually whitish... STELIDINAE

Scopa present in female; maxillary palpi two or three jointed, joint 2 long and hairy; mandibles 2–7-dentate; ornamentation yellow or red. ANTHIDIINAE

Subfamily STELIDINAE

The genus *Stelis* is the only Nebraska representative of this subfamily, but the genus is represented within our limits by at least two groups or subgenera.

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Genus **Stelis** Panzer, 1802

KEY TO THE NEBRASKA SUBGENERA

Second recurrent nervure received opposite or beyond the second transverse cubital nervure, rarely before it.....*Microstelis*
(Type *Stelis lateralis* Cresson)

Second recurrent nervure received by the second submarginal cell before the second transverse cubital nervure, rarely opposite it.....*Chelynia*
(Type *Stelis nitida* Cresson)

Subgenus **Microstelis** Robertson, 1903

KEY TO THE NEBRASKA SPECIES

Female

Abdomen 8–14 spotted, on tergites 1–5; color black; pubescence whitish; 6–7 mm.....*lateralis*

Male

Abdominal tergites 1–5 with lateral whitish spots, 4 and 5 sometimes 4 spotted, elsewhere wholly black; 5.5–6 mm.....*lateralis*

Stelis (Microstelis) lateralis Cresson.

1864. *Stelis lateralis* Cresson, *Proc. Ent. Soc. Phil.*, II, pp. 410–411, ♀.
1898. *Stelis lateralis* Robertson, *Trans. Acad. Sci. St. Louis*, VIII, p. 48, ♂ ♀.
1898. *Stelis lateralis* Cockerell, *The Entomologist*, p. 167.
1903. *Microstelis lateralis* Robertson, *Trans. Am. Ent. Soc.*, XXIX, p. 175, ♀ ♂.

Three females of this species were bred from a nest of *Alcidamea simplex* in a stem of *Helianthus annuus* collected at Lincoln, emerging in June along with three females of the host bee. Mr. J. C. Crawford collected this bee at the nest of the same host in rose bushes at West Point, Nebraska, June 10, 1901. The only occasion it has been collected in the field was at South Bend, May 18, 1911, when the writer captured a male at flowers of *Erigeron philadelphicus*.

Subgenus **Chelynia** Provancher, 1888

KEY TO THE NEBRASKA SPECIES

Female

Greenish blue; abdomen with four pale yellowish white bands; hair of

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pleura black; valves of pygidium subuniformly rounded on apical margin, the dorsal valve distinctly exceeding the ventral valve; 10 mm. *pulchra*

(The male of *S. pulchra* is unknown.)

Stelis (Chelynia) pulchra Crawford.

1902. *Stelis pulchra* Crawford, *Canadian Entomologist,* XXXIV, pp. 239–240, ♀.

1907. *Chelynia pulchra* Cockerell, *Univ. of Colorado Studies,* IV, p. 249, ♀.

Known as a Nebraska bee only from the type, a female collected in Warbonnet canyon, Sioux county, June 28, 1901, by J. C. Crawford, and subsequently described by him. When captured the bee was flying over gravelly ground. Mrs. W. P. Cockerell has captured this species at Boulder, Colorado, on a small *Astragalus.*

SPECIES FROM OUTSIDE NEBRASKA

Stelis (Chelynia) subemarginata Cresson.

1878. *Stelis? subemarginata* Cresson, *Trans. Am. Ent. Soc.,* VII, p. 93, ♀.

1898. *Stelis subemarginata* Cockerell, *The Entomologist,* p. 167.

A female from the Big Horn mountains before the writer, taken at 8,000 feet in August 1894, agrees with Cresson's description of *subemarginata* in all essential details. The two cotypes of *subemarginata* came from Colorado.

Stelis (Chelynia) idahoensis n. sp.

♀. Length 10 mm. Shining black. Head and thorax closely punctured, the punctures rather coarse. Pubescence erect, rather thin, pale, on face above and on mesopleura copiously mixed with black. Antennal joint 3 above subequal to 4, below slightly exceeding 4. Wings slightly darkened, especially apically, nervures dark brown, second submarginal cell not over one-fourth longer than the first, both recurrent nervures received within this cell. Legs thinly clothed with black hairs, the inner sides of the tarsal joints with reddish golden pubescence. Abdomen shining black, sparsely punctured except along basal margins of the tergites, tergites 1–5 with transverse, narrow, complete, yellowish white bands, all narrowed medially and slightly but sharply incised medially on anterior margin on 3–5, on 1–4 attaining the sides of the tergite and laterally produced downward in a swollen termination while the lateral posterior margin is broadly emarginate, on 5 abbreviated and terminating acutely laterally. Tergites

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with long black bristles, becoming copious laterally on tergites 3–6. Pygidium coarsely punctured above, the dorsal valve terminally broadly rounded, the ventral valve much surpassing the dorsal valve and produced into a long, oval lobe on each side. Venter subopaque, minutely punctured.

Type.—Moscow Mountain, Idaho, ♀.

This species is a typical *Chelynia* and belongs to the *nitida* group. It is closest to *S.* (*Chelynia*) *subemarginata* Cresson, but differs at once in the deeply bilobed ventral valve of the pygidium (in *subemarginata* the ventral valve only slightly exceeds the dorsal valve, and is broadly truncate with the sides scarcely produced into lobes), and in having the second submarginal cell only about one-fourth longer than the first (fully one-third longer in *subemarginata*); from *S.* (*Chelynia*) *nitida* Cresson it differs in its close and rather coarse puncturation (*nitida* is sparsely and finely punctured), and in having the bands on tergites 1–4 broadly emarginate laterally on the posterior margin; while from *S.* (*Chelynia*) *monticola* Cresson it differs again in the close puncturation and also in the oblong ovate abdomen (the abdomen is short and subglobose in *monticola*). The pygidium is very different from that of *S.* (*Chelynia*) *rubi* Ckll. From *S.* (*Chelynia*) *elegans* Cresson, *subcaerulea* Cresson, and *pulchra* Crawford it differs in its wholly black ground color, without a trace of blue or green, and in the bilobed ventral valve of the pygidium; from *S.* (*Chelynia*) *pavonina* Ckll., *cusackae* Ckll., and *calliphorina* Ckll., in its black color and in the possession of creamy bands on tergites 1–5; from *S.* (*Microstelis*) *montana* Cresson, *seneciophila* Ckll., and *carnifex* Ckll., in the black color and in the different venation. From *S.* (*Microstelis*) *obesa* Say, *costalis* Cresson, *rudbeckiarum* Ckll., *louisae* Ckll., and *laticincta* Cresson, and from *S.* (*Stelidium*) *trypetinum* Robertson, it may be distinguished at a glance by the complete lack of yellow ornaments on the head and thorax, while the red ornaments of *S. australis* Cresson serve to easily distinguish that species. By its much larger size it may be easily separated from the other North American species of the genus, viz., *foederalis* Smith, *birkmanni* Ckll., *lateralis* Cresson, *permaculata* Ckll., *sexmaculata* Ashmead and *interrupta* Cresson.

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Stelis (Chelynia) elegans Cresson.

1864. *Stelis elegans* Cresson, *Proc. Ent. Soc. Phil.*, II, p. 411, ♀.
1898. *Stelis elegans* Cockerell, *The Entomologist*, p. 166.
1901. *Chelynia elegans* Cockerell, *Univ. of Colorado Studies*, IV, p. 249, ♂.
1911. *Chelynia elegans* Cockerell, *Ann. Mag. Nat. Hist.*, series 8, VIII, p. 768.

Before the writer are three females of this species from Colorado. Two were collected at Russell, June 24 and 25, 1907, by H. S. Smith and L. Bruner, respectively, while the third specimen is from Ward.

Stelis (Chelynia) rubi Cockerell.

1898. *Stelis rubi* Cockerell, *The Entomologist*, pp. 167–168, ♀ (July, 1898).
1898. *Melanostelis betheli* Ashmead, *Psyche*, VIII, p. 283, ♀ (November, 1898).

A pair apparently referable to this species is before the writer, both collected at Ute creek, Costilla county, Colorado, by R. W. Dawson, at 9,000 feet, the female July 6, 1907, at flowers of *Erigeron*, the male July 17, 1907. This species has previously been collected only at Seattle and Olympia, Washington, on May 11 by Trevor Kincaid and on June 2 by L. Bethel, respectively, the former at flowers of *Rubus ursinus*. While agreeing with the descriptions of these Washington specimens in all structural characters, the Colorado female has the hair of the mesonotum and propodeum almost wholly pale and there is much pale hair on the face below, so that it may represent a distinct form. In the pale pubescence it resembles the recently described *S.* (*Chelynia*) *ricardonis* Ckll., but it has the abdominal bands colored as in *rubi*. The dorsally medially keeled and ventrally apically tridentate pygidium of the female distinguishes the species in this sex at a glance, and it may eventually prove desirable to continue to recognize *Melanostelis* as a subgenus on this character. The species evidently belongs nearest to the *nitida* group. The male sex of this species is undescribed so the following diagnosis is given:

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♂. Length 6.5 mm. Black. Head and thorax subopaque, very densely and strongly punctured. Hair of head and thorax grayish white with a few black hairs intermixed on vertex and mesoscutellum. Legs densely punctured, very thinly clothed with pale pubescence and with sparse black bristles scattered on last four tibiae, the tarsi within with reddish golden hair. Bowl of enclosure on propodeum opaque, finely roughened, the neck shining. Venation as in ♀. Abdomen somewhat shiny, the tergites closely punctured except on the cream-colored bands, especially basally, bands on tergites 1–5, all complete, those on 1–4 very feebly broadly subemarginate laterally on posterior margin, those on 3–5 feebly incised medially on posterior margin nearly cutting through on 5. Tergite 5 coarsely punctured, its apical border broadly raised laterally. Pygidium crescentic in outline and with a slight marginal notch medially. Venter indistinctly roughened, sternite 5 with a dense fringe of ochreous hair, sternite 4 with a similar but paler and much thinner fringe.

Allotype.—Ute creek, Costilla county, Colorado, July 17, 1907 (R. W. Dawson).

Subfamily ANTHIDIINAE

KEY TO THE NEBRASKA GENERA

Pulvilli absent; second recurrent nervure received opposite second transverse cubital nervure, or rarely a little beyond it; pygidium of male usually terminally spined ..... *Anthidium*

Pulvilli present; second recurrent nervure received well beyond second transverse cubital nervure, or sometimes opposite it in a few species; pygidium of male usually truncated or lobed ..... *Dianthidium*

Genus **Anthidium** Fabricius, 1804

KEY TO THE NEBRASKA SPECIES

Females

Cheeks wholly yellow and this color connected by a broad uninterrupted yellow line across the vertex; broad lateral face marks extending nearly to vertex, clypeus except a broad central band, mandibles except tips, four scarcely interrupted spots on mesoscutellum, lines on lateral and antero-lateral margins of thorax, tubercles and broad area beneath, spot on tegulae, legs except coxae and inner surface of femora and tibiae, broad medially interrupted bands on abdominal tergites 1–5 and all of tergite 6 except two depressed black spots, deep yellow; all pubescence whitish; 14 mm..... *serranum*

Cheeks black, or with a yellow band not connected by a band across the vertex; ornamentation not as above..... 1

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1. Margin of pygidium tridentate, the middle tooth largest, bifid at tip and bearing a median carina which extends across the pygidium; mesoscutellum with four or two yellow spots; tubercles black; legs wholly black; tegulae with a yellow spot, and a yellow spot on vertex behind each eye; abdominal tergites 1–5 with deep yellow bands, interrupted medially or nearly so, the lateral halves deeply emarginate, breaking through on first tergite and forming four spots; thorax above with pale ochreous hair; ventral scopa silvery; 10–11 mm.....*psoraleae*

1. Margin of pygidium rounded with a weak tooth on each side laterally, or broadly truncate.....2

2. Mesoscutum with a yellow line over each tegula and usually with two yellow lines along anterior margin.....3

2. Mesoscutum without yellow lines over tegulae or on anterior margin..4

3. Legs wholly black; clypeus black; pygidium broadly truncate, medially carinate and with a median bifid tooth; 11 mm. *clypeodentatum*

3. Legs with yellow spots on the knees; clypeus with two yellow spots nearly confluent with large subtriangular facial spots; pygidium broadly rounded, notched laterally, not carinate or medially toothed; 11–12 mm.....*porterae*

4. Mesoscutellum wholly black; tubercles black; tibiae with only a small knee spot; front of tegulae yellow; hair of thorax above pale grayish white; ventral scopa silvery gray mixed with blackish centrally; 8 mm.....*tenuiflorae.*

4. Mesoscutellum spotted; tubercles yellow 5

5. Clypeus and sides of face with large yellow spots; first abdominal tergite merely with lateral spots; legs more yellow; mesoscutellum with two yellow spots; 10 mm.....*nebrascense*

5. Clypeus and sides of face entirely black; first abdominal tergite with a medially interrupted yellow band; legs with less yellow..6

6. Mesoscutellum with two yellow spots; tibial stripes short and narrower; ventral scopa brownish white edged with fuscous; 9 mm. *emarginatum* var.

6. Mesoscutellum with four yellow spots; tibial stripes broader and extending nearly the length of the joint.....7

7. Hair of thorax above grayish white; ventral scopa whitish; 9 mm. *emarginatum*

7. Hair of thorax above deep brownish ochreous; ventral scopa golden brown and black; 9 mm.....*astragali*

Males

A broad yellow line behind eyes slightly interrupted on vertex; 15.5 mm. *serranum*

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Only a small yellow spot or band behind the eyes.....1
1. Lobes of the pygidium long and terminating in an inwardly directed tooth; pygidium wholly black; mesoscutellum usually with two yellow lines; first abdominal tergite with two large lateral and usually two small discal spots; 12 mm.....*psoraleae*
1. Lobes of the pygidium evenly rounded, their apices not distinctly produced and directed inwardly.....2
2. Venter red; pygidium usually red, and sometimes the whole of tergum red (variety *amabile* Ckll.); 13–15 mm.....*porterae*
2. Venter and pygidium black, the latter sometimes yellow spotted.....3
3. Mesoscutellum black; scape black or with a small yellow terminal spot 4
3. Mesoscutellum with two linear spots.....5
4. Middle and hind tibiae with large triangular yellowish apical areas as well as knee spots; band on first abdominal tergite reduced to small lateral spots sometimes with minute middle dots between; 11–12 mm. *nebrascense*
4. Middle and hind tibiae black except for the small yellow knee spots; first abdominal tergite always distinctly four spotted; 9–11 mm. *tenuiflorae*
5. Scape black; hair of thorax only slightly if at all tinged with ochreous; lobes of pygidium rather narrowly rounded; 10 mm. *emarginatum*
5. Scape with a broad yellow stripe in front; hair of thorax above strongly tinged with ochreous; lobes of pygidium broadly rounded; 9–10 mm.....*astragali*

(The male of *clypeodentatum* is unknown or unrecognized.)

Anthidium serranum Cockerell.

1904. *Anthidium serranum* Cockerell, *Bull. Sou. California Acad. Sci.*, III, pp. 23–24, ♂.

A single female specimen before the writer labeled simply "Nebr.?" evidently belongs here rather than with *illustre* Cresson because of the color of the thoracic pubescence, which is white rather than fuscous; otherwise it agrees with Cresson's description of the female of *illustre*. It is extremely doubtful that this specimen was captured in Nebraska, as the known range of the species of this group, *A. illustre, serranum, conspicuum,* etc., is confined to California and Nevada, and it is most likely that the specimen came from the former state. It has seemed best, however, to include the species in the list with this expla-

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nation. As the female of *serranum* has never been described this specimen becomes the allotype of the species, and may be easily recognized by the characters given in the synoptic table.

Anthidium psoraleae Robertson.

1902. *Anthidium psoraleae* Robertson, *Canadian Entomologist,* XXXIV, p. 322, ♀ ♂.
1903. *Anthidium psoraleae* Robertson, *Trans. Am. Ent. Soc.,* XXIX, p. 175, ♀ ♂.

The writer captured a male of this species at Lincoln, June 23, 1912, at flowers of *Psoralea tenuiflora.* On June 17, 1902, J. C. Crawford captured a pair of this species in copula at Springview Bridge, Brown county, Nebraska, on the same flower, and later captured an additional male in the same locality, June 23, 1902, also on *Psoralea tenuiflora.* These are the only captures of this species in the state.

Anthidium clypeodentatum n. sp.

♀. Length 11 mm. Clypeus black, coarsely cancellately punctured with a central apical area of much coarser and more separated punctures, apical margin with about six distinct teeth forming a continuous row. Face coarsely closely punctured. Antennae black, the scape with lateral brushes of white hair, joint 2 or 4 about one-third shorter than 3. An oblong yellow mark on each side of vertex behind eye. Spot on tegulae, line above, a short broad line on each side of anterior margin of mesoscutum, spot on tubercles and four large oval spots on mesoscutellum, deep yellow. Legs wholly black, clothed with white pubescence except on inner surface of tarsi where it is rufous and black. Mesopleura with dense grayish white hair, that on thorax above very slightly tinged with ochreous. Abdomen closely punctured, tergites 1–5 with deep yellow bands, all interrupted medially and deeply emarginate on the anterior margin of each half laterally, except on the first tergite where the emargination is on the posterior margin. Pygidium wholly black, densely punctured above, its margin broadly truncate but with a stout, median, bifid, forwardly directed tooth from which arises a median carina which crosses the tergite transversely. Ventral scopa white. Wings subhyaline, slightly darkened apically.

Type.—Sioux county, Nebraska, ♀.

This species is allied to *psoraleae,* but differs in its differently shaped pygidium, sexdentate clypeal margin, lines on mesoscutum, paler wings and different abdominal maculation. From *porterae*

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it differs at once by its black legs, immaculate and apically toothed clypeus and differently shaped pygidium.

Anthidium porterae Cockerell.

1864. *Anthidium maculifrons* Cresson, *Proc. Ent. Soc. Phil.*, II, pp. 375–376, ♀ (nec Smith, 1854).
1900. *Anthidium porterae* Cockerell, *Ann. Mag. Nat. Hist.*, series 7, V, p. 411, ♀ ♂.
1904. *Anthidium porterae* var. *amabile* Cockerell, *The Entomologist*, XXXVII, p. 7, ♂.
1907. *Anthidium porterae* Cockerell, *Univ. of Colorado Studies*, IV, p. 250, ♀ ♂.
1907. *Anthidium porterae amabile* Cockerell, *ibid.*, ♂.

A common species in western Nebraska. Monroe canyon, Bad Lands, and Glen, Sioux county; Imperial, Chase county; Mitchell, Scottsbluff county, Haigler, Dundy county and Lexington, Dawson county, June 26 to August 17, at flowers of *Kuhnistera candida*, *Cleome serrulata* and *Helianthus petiolaris*. In Dundy county the writer has found the males commonly at flowers of alfalfa, while L. M. Gates found both sexes commonly visiting it in Scottsbluff county, and R. W. Dawson collected both sexes on these blossoms in Dawson county. Many of our Nebraska males have the ground color of the abdomen red, thus representing Cockerell's variety *amabile*, but none of the series at hand is referable to the subspecies *personulatum* Ckll., though some females have the clypeal spots very small and seem to approach that form. More probably *personulatum* will turn out to be a valid species. There are also before the writer two males of typical *porterae* from Costilla county, Colorado, one from Russell, July 12, 1907, collected by H. S. Smith, and the other from Ute creek, on sage flats, collected July 19, 1907 by R. W. Dawson. Another male representing the variety *amabile* is labeled simply Hecla, Wyoming (Clason). The species discussed as *A. maculifrons* Smith by Hungerford and Williams (*Entomological News*, XXIII, p. 256) is *A. porterae*, the writer having examined a typical specimen forwarded him by Mr. Williams.

Anthidium tenuiflorae Cockerell.

1907. *Anthidium tenuiflorae* Cockerell, *Canadian Entomologist*, XXXIX, p. 135, ♀ ♂.

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1907. *Anthidium tenuiflorae* Cockerell, *Univ. of Colorado Studies,* IV, pp. 249–250, ♀ ♂.

A single female from Warbonnet canyon, Sioux county, Nebraska, collected on *Astragalus hypoglottis,* May 28, 1901, by M. Cary, seems referable here. Also before the writer is a series of three females and one male from Custer, South Dakota, a female collected at Newcastle, Wyoming, in June, by M. Cary, a female from Ward, Colorado, and an interesting series of eleven females and five males from Russell, Fort Garland and Ute creek, Colorado, taken June 24 to July 19, 1907, by Messrs. H. S. Smith, L. Bruner and R. W. Dawson. All of these specimens seem to be conspecific and they agree too closely with the description of *A. tenuiflorae* to warrant any separation from that species; yet the scopa is often nearly wholly pale and the tegulae usually lack the pale posterior spot in the female, while in the male the scape is usually black or at best has only a short apical pale line, and the pygidial lobes, though variable, are usually broader than the space between them and the central spine.

Anthidium nebrascense n. sp.

♂. Length 11–12 mm. Black; the clypeus, broadly cuneate lateral face marks filling the space between clypeus and orbits, most of outer surface of mandibles, small dots on vertex behind summits of eyes, sometimes a spot on front of tegulae, spots on all of the knees, large triangular areas or stripes on outer side of tibiae apically, outer side of all the basitarsi, rounded or subquadrate spots on sides of tergite 1 with sometimes tiny discal spots, four spots on tergite 2, interrupted and deeply anteriorly emarginate bands on tergites 3–5, two cuneate spots on 6 and sometimes spots on the pygidium, yellowish white to chrome yellow. Head and thorax very densely and quite strongly punctured, the punctures distinct except on propodeum where they are shallow and poorly formed. Antennae wholly black. Pubescence wholly whitish except for the usual pale golden areas on the tarsi within, on vertex, mesoscutellum and pleura rather long and copious. Lobes of pygidium rather narrowly rounded, their width not greater than the distance between their bases and the central spine. Abdominal tergites finely and densely punctured except on the pale spots or bands, the punctures apically distinct but indistinct on the bases of the tergites. Wings very slightly darkened, the nervures and stigma blackish.

♀. Length 10 mm. Black; round spots on sides of clypeus, oval spots on sides of face nearly coalesced with the clypeal spots, outer side of mandibles except base and tip, oval spots on vertex behind summit of eye,

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tubercles, spot on tegulae in front, two linear spots on mesoscutellum, lines on first four femora beneath and an apical spot on posterior femora, broad stripes on the tibiae covering most of the outer face and nearly interrupted subbasally on anterior tibiae, outer side of basitarsi, spots on extreme sides of first abdominal tergite, broadly medially interrupted bands on tergites 2–5 which are deeply emarginate on anterior margin and all but cut through on 2 and 3, and lateral cuneate spots on 6, bright yellow. Apical tarsal joints reddish. Pygidium rounded, with short lateral spines. Clypeus coarsely punctured, its apical margin raised and bearing on each side two strong teeth, the margin between the teeth with a double curve. Antennae wholly black. Vertex and mesoscutum finely roughened by very close small punctures, the enclosure on pygidium opaque, densely and shallowly punctured on a broad basal area. Face with long pale hair, dense in two tufts above antennae, that on vertex strongly ochreous, that on mesoscutum thin and rather short, gray faintly tinged with ochreous. Ventral scopa white. Hair of tarsi within bright reddish or golden. Wings as in ♂ or perhaps slightly clearer.

Type.—Sowbelly canyon, Sioux county, Nebraska, June 23, 1911, on *Trifolium repens* (R. W. Dawson), ♂.

Allotype.—Newcastle, Wyoming, June (M. Cary), ♀.

Paratypes.—Type lot, 2 ♂.

This is a member of the *emarginatum* group. The male differs at once from *A. emarginatum* Cresson, *A. titusi* Ckll., *A. tenuiflorae* Ckll., etc., in the broad yellow stripes on the apical half of the tibiae. The Wyoming female seems to agree with what would be expected by analogy in the other sex of the Nebraska males, so that little hesitancy is felt in so considering it; only, one would rather expect the two sexes to agree in color of the tubercles, and, in fact, the males usually do have a small pale spot or band on the tubercles, though sometimes they are entirely black.

Anthidium emarginatum (Say).

1824. *Megachile emarginata* Say, Long's Second Exped., II, p. 352, ♀.
1864. *Anthidium emarginatum* Cresson, *Proc. Ent. Soc. Phil.*, II, pp. 374–375, ♀ ♂.
1868. *Anthidium atrifrons* Cresson, *Trans. Am. Ent. Soc.*, I, p. 387, ♀.
1907. *Anthidium emarginatum* Cockerell, *Univ. of Colorado Studies*, IV, pp. 249–250, ♀ ♂.

Common in Sioux county, in Warbonnet and Monroe canyons, June 13 to August 6, at flowers of *Pentstemon glaber* and an

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undetermined borage. The females agree exactly with Say's original description, but they differ from Cresson's description of his Kansas specimen in having the band on tergite 1 interrupted medially and not indented on the posterior margin, but sometimes enclosing a central black spot (which may break through on the anterior margin to form a narrow and deep diagonal emargination) as he described for *A. atrifrons,* which he later recognized as synonymous with *A. emarginatum* but which was described from four females from Colorado. From *A. tenuiflorae* Ckll., this species may be known in the female by the four yellow spots on the mesoscutellum, arranged in an arc, as contrasted with the wholly black mesoscutellum of *tenuiflorae,* the yellow tubercles (black in *tenuiflorae*) and the long conspicuous yellow stripe on the external faces of the tibiae (in *tenuiflorae* there are only the small knee spots). The male is distinguishable by the linear yellow spots on the mesoscutellum and the more narrowly rounded lobes of the pygidium, the emargination between the apices of the lobes and the median spine being twice as broad as deep (scarcely broader than deep in *tenuiflorae*).

Anthidium emarginatum (Say) var.

A female collected at Mitchell, Scottsbluff county, Nebraska, July 29, 1912, on flowers of alfalfa, by L. M. Gates, differs from the Sioux county females in the much darker scopa, paler maculations, less extensively pale tibiae, and especially in the lack of the outer pair of mesoscutellar spots. Possibly it may be distinct, but for the present is best considered merely a variety of *emarginatum.*

Anthidium astragali n. sp.

♂. Length 9–10 mm. Clypeus, sides of face up to level of insertion of antennae, and broad stripe on front of scape, yellow; rest of head, except a yellow oblong mark on vertex behind the tops of the eyes and the yellow mandibles, black. Scape densely hairy. Clypeus with the apex sinuate but not dentate. Mesoscutellum with merely two narrow lines on posterior face. Yellow bands on abdominal tergites 1–6, usually interrupted medially and with very deep emarginations on the anterior margin, entirely cutting through on tergite 1 and dividing the band into four spots, the external segment wanting on 6, leaving comma-shaped marks. Pygidium

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entirely black, or sometimes with small yellow spots, its lobes broadly and evenly rounded, semicircular. Legs with a yellow stripe on outer face of tibiae and whole of outer face of basitarsi yellow, the tibial stripe sometimes obliterated apically. Apical tarsal joints dark. In other characters as in the ♀.

♀. Length 8–9 mm. Entire face coarsely and very densely punctured, subcancellate on clypeus but separated and distinct on vertex, bearing long thin white hair which becomes dense in a tuft about each antennal base and on scape. Antennae wholly black, the scape conspicuously punctured, joint 3 slightly exceeding 4. Clypeus with its apical margin depressed, slightly sinuate, bidentate at each side, the inner tooth the larger. Cheeks coarsely and closely but very shallowly punctured, sparsely white hairy. A small yellow spot on vertex behind superior apex of eye. Entire thorax very coarsely and closely punctured, the vertex and thorax above with dense erect deep brownish ochreous hair, the pleura and legs with copious grayish white hair. Margins of tegulae broadly yellow, the central area brownish black, and wing bases with a yellow spot. Tubercles yellow. Mesoscutellum with four yellow spots arranged in an arc, the inner pair of spots twice as large as the outer pair. Legs black except for a broad yellow stripe on the anterior face of all of the tibiae, and sometimes a small yellow stripe on the outer face of the hind basitarsi. Inner face of tarsal joints with blackish hair, the outer surface largely fuscous and black but considerably intermixed with silvery hairs on the bases of the basitarsi. Ventral scopa usually pale golden brownish more or less mixed with blackish, sometimes wholly black. Abdominal tergites distinctly punctured, tergites 1–6 with broad yellow bands, narrowly interrupted medially, those on tergites 2–6 emarginate in the middle of each lateral half anteriorly. Sides and disk of abdomen with sparse erect pale hair. Wings very slightly darkened apically, nervures and stigma black.

Type.—Bad Lands at mouth of Monroe canyon, Sioux county, Nebraska, June 6, 1901, on *Homalobus tenellus* (M. Cary), ♂.

Allotype.—Type lot, ♀.

Paratypes.—Type lot, 7 ♀, 1 ♂; type locality, May 28, 1901, on *Homalobus tenellus* (L. Bruner), 4 ♀; do. (M. A. Carriker), 1 ♂; Warbonnet canyon, Sioux county, May 28, 1901, on *Astragalus hypoglottis* (M. Cary), 1 ♀, 1 ♂; do., June 16, 1901, on *Astragalus hypoglottis* (M. Cary), 1 ♀ 1 ♂; Ute creek, Costilla county, Colorado, 9,000 feet, July 3, 1907 (L. Bruner), 1 ♀.

From *A. tenuiflorae* Ckll., this species is easily known by the spotted mesoscutellum and yellow tubercles in the female and by the spotted mesoscutellum and broad yellow stripe on the front of

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the scape in the male. From *A. emarginatum* (Say), it is distinguishable by the deep ochreous color of the pubescence of the thorax above and the dark colored scopa in the female and by the yellow stripe on the scape and the more broadly rounded pygidial lobes in the male.

SPECIES FROM OUTSIDE NEBRASKA

Anthidium praedentatum trianguliferum n. subsp.

♀. Length 10 mm. Belongs to the *placitum* group, the species of which have the pygidial tergite yellow or mostly yellow. Agrees with Cresson's description of the unique type of *A. placitum* from Nevada (*Trans. Am. Ent. Soc.,* VII, p. 206), except that there is no fuscous hair on mesonotum and very little on vertex (the pubescence being all whitish, becoming strongly tinged with ochreous on vertex), the median stripe on the clypeus is attenuated below so as to form a triangle of black subequal to the yellow triangles set off on either side, the band on the vertex is so broadly interrupted as to be practically reduced to elongate cuneate lateral spots, the tegulae have a yellow spot on the posterior margin, the axillae are mostly yellow and are nearly confluent with the mesoscutellar lines, the yellow bands on tergites 1–4 are narrowly interrupted medially, and the abdomen is narrower, parallel-sided, and rather distinctly punctured. In the broadly interrupted band on the vertex, the yellow-banded axillae, and the interrupted bands on tergites 1–4, it agrees with *A. praedentatum* Ckll. (described originally as a subspecies of *A. blanditum* Cresson and later referred to as a subspecies of *A. placitum,* but probably a distinct species), from Boulder, Colorado (*The Entomologist,* XL, p. 99), but differs from that form in the triangular, not W-shaped, black clypeal mark. In the clypeal marking it agrees with the female of *A. poudreum* Titus (*Proc. U. S. Nat. Mus.,* XL, pp. 248–249), but the yellow lateral mesoscutal stripe is angulated anteriorly and the femora have broad yellow stripes. From *A. blanditum* Cresson and *A. blanditum pecosense* Ckll., it differs in the dark median band on the clypeus, that species having the clypeus yellow or mostly yellow.

Type.—Fort Garland, Costilla county, Colorado, July 18, 1907 (L. Bruner), ♀.

Anthidium hesperium n. sp.

♀. Length 9–10 mm. Form stout. Black; clypeus except a broad parallel-sided median band, triangular areas on sides of face extending up to level of insertion of antennae, mandibles except tips, small round spots on vertex behind eyes, large spots on front and hind margins of tegulae, spot on wing bases, line over tegulae, tubercles, four spots on mesoscu-

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tellum, broad stripes on first four femora beneath and a short stripe on apex of hind femora beneath, outer faces of all of the tibiae except sometimes a dark subapical spot, all the basitarsi externally, four spots on first abdominal tergite, broad medially interrupted bands on tergites 2–5 which are emarginate on the anterior margin, and all of tergite 6 except a narrow median band, orange yellow. Pygidium broadly rounded, without distinct lateral angles or teeth. Clypeal margin slightly concave between the pair of strong teeth on either side. Head and thorax opaque, roughened by a fine and very dense puncturation. Pubescence pale, dull gray on vertex and mesonotum, elsewhere longer and white except for the usual reddish hair on the inner side of the tarsi. Ventral scopa white. Wings subhyaline, slightly darkened on the apical margin, nervures black.

Type.—Palo Alto, California, July 2, 1891 (Lot 66, Leland Stanford Jr. Univ.), ♀.

Paratype.—Pacific Grove, California, July, 1894, ♀.

Differs from *A. placitum, A. praedentatum* and *A. p. triangu-liferum* in lacking the angular yellow stripe on mesoscutum and in having the band on the pygidial tergite interrupted; from *A. blanditum* and its form *pecosense* in the largely dark clypeus; from *A. poudreum* in the banded femora and interrupted band on pygidial tergite; from *A. montivagum* Cresson in larger size and different maculation.

Anthidium hesperium dentipygum n. subsp.

♀. Length 10 mm. Similar to typical *A. hesperium,* but the sides of the broadly rounded pygidium have very distinct teeth, the yellow on the clypeus is reduced to large spots at the sides which are nearly confluent with the facial spots, and the spots on each lateral half of tergite 1 are sometimes connected.

Type.—Laramie, Wyoming, ♀.

Paratype.—Type locality, 1 ♀.

Anthidium transversum n. sp.

♀. Length 8.5 mm. Black; clypeus except two oval dots at base, triangular areas at sides of face between clypeus and orbits, mandibles except tips, oval spots on vertex behind eyes, front half of tegulae and a spot on hind margin, lines over tegulae, lines on anterior lateral margins of mesoscutum, tubercles, four spots on mesoscutellum of which the inner pair are much the larger, lines on first four femora behind, stripes on outer faces of all of the tibiae, four spots on first abdominal tergite, medially interrupted bands on tergites 2–5 which are more or less emarginate

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on anterior margin, and large spots on tergite 6 which are irregularly emarginate externally, deep yellow. Clypeus with two strong lateral teeth on each side of the apical margin between which the margin is transverse and smooth. Inner faces of tarsi with reddish hair, otherwise pubescence wholly whitish. Ventral scopa white. Pygidium broadly rounded with weak lateral teeth or angulations. Wings slightly darkened, nervures dark brown.

Type.—Pacific Grove, California, July, 1894, ♀.

Allied to *A. hesperium* and *A. h. dentipygum,* just described, but differing in smaller size, yellow clypeus without a median black area, transverse intradental clypeal margin, yellow lines on anterior margin of mesoscutum, narrower yellow tibial stripes, lack of yellow stripe on hind femora, less extensively yellow pygidium, etc. It is of the same size as *A. montivagum* Cresson, but differs at once in the mostly yellow clypeus, the band on tergite 1 divided into four spots, the deeper yellow color of the ornaments, etc.

Anthidium sagittipictum n. sp.

♀. Length 7 mm. Black; two spots on sides of clypeus which are nearly confluent with two spots on lower corners of face, a sagittate spot in the trapezoidal median dark clypeal area, mandibles except tips, elongate marks on vertex which extend inward until opposite outer ocelli, spot on tegulae in front, narrow line over tegulae, tubercles, two elongate spots on mesoscutellum, basal yellow stripes on the outer faces of the tibiae which extend nearly the entire length of the joint on anterior pair, four spots on abdominal tergite 1, medially interrupted bands on tergites 2–6 which are broadly emarginate on anterior margin on 2–4 and involve most of the tergite on 6, yellow. Sides of apical margin of clypeus with a pair of prominent teeth, the margin between them concave and even. Head and thorax dull, roughened by an exceedingly close, fine puncturation. Pubescence all pale, dense on face above antennae, on pleura and sides of abdomen, very sparse and short on mesoscutum. Hair of legs pale except the pale reddish hair on tarsi within. Ventral scopa white. Pygidium broadly rounded or subtruncate on apical margin and with a very feeble tooth or angulation on each side. Wings hyaline, nervures brown.

Type.—Pullman, Washington (C. V. Piper), ♀. (Washington Exp. Sta. No. 127.)

A distinct little species, scarcely needing comparison with its congeners of like size.

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Anthidium maculosum Cresson.

1878. *Anthidium maculosum* Cresson, *Trans. Am. Ent. Soc.*, VII, p. 110, ♀.

1900. *Anthidium maculosum* Cockerell, *Ann. Mag. Nat. Hist.*, series 7, V, p. 412, ♂.

Cresson described this species from two female cotypes, one of which was from California and one from Utah. Before the writer are two typical females, from two additional states; one from Colorado Springs, Colorado, and one from Custer, South Dakota. Cockerell has recorded the species from New Mexico, also.

Anthidium californicum Cresson.

1879. *Anthidium californicum* Cresson, *Trans. Am. Ent. Soc.*, VII, p. 206, ♂.

1901. *Anthidium californicum* Fowler, *Rept. Univ. of California Exp. Sta.*, pp. 324–325, ♀ ♂(??).

1904. *Anthidium californicum* Cockerell, *Bull. Sou. California Acad. Sci.*, III, pp. 57 and 59, ♂.

A series of two females and three males from Pacific Grove, California, July, 1894, is before the writer. A fourth male without locality data is probably from California, and is labelled "June 30, 1892 (B)." These males agree with Cresson's description of the two male cotypes, and run to *californicum* in Cockerell's table, where the characters of the species are determined from five males from Los Angeles, so that with little doubt all are conspecific. The female assigned to *californicum* by Fowler, however, agrees more closely with *A. transversum*, described above, but almost certainly is not the female of *A. californicum*. The females before the writer, taken in company with male *californicum*, agree with the males except that the clypeus is black or has two very small lateral yellow clypeal dots subconfluent with two similar dots on the sides of the face, and the mandibles are black. The mesoscutum and mesoscutellum are black without any maculations whatever. The males of *californicum* before the writer all have black tubercles, while the yellow markings on the basitarsi are quite uniform, so that they probably represent a different species from the males determined as

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californicum by Fowler; most likely his specimens belonged with the *transversum*-like females with which he associated them.

Anthidium incurvatum n. sp.

♂. Length 12 mm. Black; clypeus, lateral face marks ending truncately at lower level of insertion of antennae, mandibles except tips, two large round spots on vertex behind tops of eyes, large L-shaped marks on antero-lateral angles of mesoscutum which extend inward one-third across the anterior margin of mesoscutum and backward over tegulae, front half of tegulae or nearly that, tubercles, four spots on mesoscutellum, the outer and slightly smaller pair of which are on the axillae, outer faces of basitarsi, small spots on apices of last four tibiae, four spots on abdominal tergite 1, the inner pair of which are sometimes large and sagittate but often very small or subobsolete, tergites 2–6 with bands which are sometimes all complete (in type), but often medially interrupted on 2, 3 or 6, and always very deeply emarginate on anterior margins of 2–5 and medially greatly attenuated and incised on anterior margin, and sometimes lateral spots on pygidium above, yellow. Antennae deep black, joint 3 one and one-third as long as 4 in the shortest plane. Pubescence copious, long and white on face, pleura, legs and sides and venter of abdomen, on thorax above erect and pale ochreous. Hair on inner side of basitarsi reddish, deeper red on terminal joints. Wings slightly darkened basally and distinctly darkened beyond submarginals, nervures black. Outer lobes of pygidium broad and with their tips produced and incurved as in *californicum,* only even more acutely so, the middle lobe narrow, slightly curved, nearly as long as the outer lobes and continued across the tergite as a median carina. Tergite 6 with long curved lateral spines.

Type.—Ute creek, Costilla county, Colorado, on sage flats, July 19, 1907 (H. S. Smith), ♂.

Paratypes.—Type lot, 2 ♂.

Obviously allied to *A. californicum* Cresson but differing in the yellow tubercles, yellow marks on antero-lateral angles of mesoscutum, yellow spots on mesoscutellum, etc.

Anthidium cognatum Cresson.

1878. *Anthidium cognatum* Cresson, *Trans. Am. Ent. Soc.,* VII, p. 109, ♀ ♂.

1900. *Anthidium cognatum* Cockerell, *Ann. Mag. Nat. Hist.,* series 7, V, p. 412, ♀ ♂.

1903. *Anthidium cognatum* Robertson, *Trans. Am. Ent. Soc.,* XXIX, p. 175, ♀ ♂.

Cresson described this species from Georgia, and later Cockerell recorded it from New Mexico and Robertson recorded it from

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Illinois. Before the writer is a male from Texas, received years ago by the University from Theo. Pergande. This specimen has the pygidium red, as in *porterae,* but may be distinguished at once from that species by the broad yellow lines on scape and vertex, the greater amount of yellow on the tibiae, and especially by the armature of the pygidium, the outer lobes of which are much more slender, while the median spine on sternite 6 is short and not pointed as in *porterae.*

Anthidium utahense n. sp.

1904. *Anthidium palliventre* Cockerell, *Bull. Sou. California Acad. Sci.,* pp. 57 and 60, ♂ (not of Cresson).

♂. Length 9–10 mm. Black; clypeus, lateral face marks up to lower level of insertion of antennae, mandibles except tips, elongate oval spots on vertex behind eyes, spots on tegulae in front, all of the tibiae at knees, spots on apices of first four tibiae externally, all the basitarsi, four spots on abdominal tergites 1 and 2, medially interrupted bands on tergites 3–5, which are very deeply emarginate laterally on anterior margin, and comma-shaped spots on tergite 6, yellow. Pubescence short but rather copious, dull grayish white becoming pure white on pleura and legs. Head and thorax finely and very densely punctured. Wings subhyaline, slightly darkened on apical margin beyond the nervures, which are brown. Sides of tergite 6 with straight sharp spines, within which are two similar but slightly smaller spines on sides of sternite 6. Pygidium with the lateral lobes very broad and rounded, the short and blunt central lobe arising from the middle of a rather shallow sinus.

♀. Length 7–9 mm. Black; two spots on lateral margins of clypeus which are nearly confluent with spots on the sides of the face, large spots on the mandibles, oval spots on the vertex behind summits of eyes, tubercles, front half of tegulae, two elongate spots on mesoscutellum, stripes on external faces of all of the tibiae, four spots on first abdominal tergite, medially interrupted bands on tergites 2–5, which are deeply emarginate on anterior margin on 2 and 3 and slightly so on 4, and large spots on pygidium, yellow. Pygidium broadly rounded, slightly angled laterally. Hair of inner side of basitarsi reddish, otherwise the pubescence is pale. Ventral scopa white. Otherwise as in ♂.

Type.—Logan, Utah, ♂.
Allotype.—Type locality, ♀.
Paratypes.—Type locality, 5 ♂, 1 ♀.
This species is the one which Cockerell hesitatingly referred to

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A. palliventre Cresson as its unknown male, at least it is so far as the specimen from Logan, Utah (L. Bruner, No. 17) is concerned. The series of six males before the writer, one of which bears the Bruner No. 17, are accompanied by two females which are not *palliventre,* but differ at once in the yellow-spotted face and clypeus, yellow tubercles, yellow lines on mesoscutellum, and broad yellow lines on tibiae externally (these parts black in *palliventre*), the lack of a yellowish tinge on the pubescence of the head and thorax (present in *palliventre*), the reddish hair of hind basitarsi within (black in *palliventre*), etc. It is close to *A. emarginatum* (Say) and *A. astragali,* just described, but differs from both in the yellow spot on mandibles and yellow spots on the clypeus and face in the female, and in the immaculate mesoscutellum, triply interrupted bands of tergite 2 and often of 3, and quite differently shaped pygidial lobes in the male. It is also close to *A. tenuiflorae* Ckll., but differs in the yellow markings on clypeus and face, mandibles, mesoscutellum, tubercles and tibiae in the female, while the male is chiefly distinguishable by the shorter and broader pygidial lobes, the deeper yellow abdominal bands which are broken into four spots on tergite 2 and often on 3 as well as on 1, etc. From *A. maculosum* Cresson, it differs in the yellow spots on face, yellow stripes on tibiae, bands on tergites 4 and 5 interrupted only medially, etc.

Genus **Dianthidium** Cockerell, 1900

KEY TO THE NEBRASKA SUBGENERA

Pulvilli large; second recurrent nervure received well beyond the second transverse cubital nervure, rarely only a little beyond it; maxillary palpi 2-jointed; mandibles 3 or more dentate; smaller species with usually distinctly interrupted abdominal bands.

Hind edge of mesoscutellum not greatly produced or sharp-edged; hind coxae of male usually spined; more slender species..*Dianthidium* (Type *D. sayi* Cockerell)

Hind edge of mesoscutellum much produced and sharp-edged, the yellow marks on it in a straight line or nearly so; hind coxae not spined; small and very compact species.....*Anthidiellum* (Type *D. strigatum* Panzer)

Pulvilli small; second recurrent nervure usually opposite the second trans-

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verse cubital nervure, rarely a little beyond it; maxillary palpi 3-jointed; mandibles 2-dentate; large species with complete abdominal bands.

Heteranthidium
(Type *D. dorsale* Lepeletier)

Subgenus **Dianthidium** Cockerell, 1900

KEY TO THE NEBRASKA SPECIES

Females

Abdominal tergites 1–6 with yellow bands, widely interrupted on tergite 1, less widely interrupted on 2, narrowly interrupted on 3 and 4, hardly interrupted on 5 and complete on 6, none of the bands emarginate laterally; antero-lateral angles of mesoscutum with L-shaped yellow marks, which extend back over tegulae; mesoscutellum with two yellow lines; 9 mm.....*jugatorium*

Abdominal tergites 1–5 with yellow bands, complete or nearly so on tergite 1, narrowly interrupted on 2–5, and more or less emarginate on the posterior margin of the bands, at least on tergites 2 and 3, 6 usually with two yellow spots..... 1

1. Legs red, suffused with blackish on coxae, trochanters and bases of femora; upper end of lateral face marks, sometimes sides of clypeus, a transverse line on vertex extending down upper cheeks behind summits of eyes, L-shaped marks on antero-lateral angles of mesoscutum which extend back over tegulae, tegulae, tubercles, mesoscutellum except extreme base medially, and apical and sometimes median suffusions on the basal abdominal tergites, red or reddish; 9–10 mm.....*sayi*

1. Legs black, with stripes on first four femora beneath and outer faces of all of the tibiae and basitarsi or at least stripes on them, pale yellow; sides of clypeus, lateral face marks, often supraclypeal, median vertical and postocellar spots, stripes behind eyes, two spots on anterior margin of mesoscutum, tubercles, tegulae exteriorly, and four spots on the mesoscutellum, pale yellow; no reddish suffusions on the basal abdominal tergites; 8 mm...*ulkei*

Males

Posterior coxae simple; pygidium black, obtusely conical with hyaline lateral basal teeth; abdominal tergites 1–6 with broad yellow bands, reduced to lateral spots on 1, very broadly interrupted on 2, gradually less interrupted on 3 to 5, complete on 6, none of the bands at all emarginate; legs yellow and black; a short line behind each eye, L-shaped yellow marks on the antero-lateral angles of mesoscutum, and two lines on mesoscutellum, yellow; 9 mm.....*jugatorium*

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Posterior coxae with long stout pale spines; pygidium wholly or largely yellow, truncate with a median tooth but no lateral teeth; bands on tergites 2–5 deeply emarginate.....1

1. Legs red; a narrowly interrupted red band on vertex and upper cheeks; tubercles, lines on mesoscutum and mesoscutellum and spots on tegulae, red; tergites 1–5 with yellow bands, deeply emarginate laterally on 2–5 and nearly cutting through on 1, those on 1–3 margined posteriorly with reddish, 6 with lateral yellow spots; pygidium yellow except at base, sometimes more or less suffused with reddish, medially carinate and with distinct emarginations on either side of the median apical tooth; 10–11 mm..*sayi*

1. Legs yellow and black; a mark behind each eye, tubercles, spots on anterior border of mesoscutum, lines on mesoscutellum, and tegulae exteriorly, pale yellow; tergites 1–6 with clear pale yellow bands, deeply emarginate laterally on 2–5 and cutting through on 1 to form three spots; pygidium yellow, broadly truncate, not carinate nor with distinct emarginations on the sides of the median apical tooth; 9 mm.....*ulkei*

Dianthidium (Dianthidium) jugatorium (Say).

1824. *Megachile jugatoria* Say, Long's Second Expedition, II, App., pp. 352–353, ♀.
1854. *Anthidium jugatorium* Smith, *Cat. Hym. Brit. Mus.*, II, p. 214.
1864. *Anthidium jugatorium* Cresson, *Proc. Ent. Soc. Phil.*, II, p. 380, ♀.
1904. *Dianthidium jugatorium* Cockerell, *Entomological News*, XV, p. 84.
1909. *Anthidium jugatorium* Graenicher, *Bull. Wisconsin Nat. Hist. Soc.*, VII, pp. 63 and 67.
1911. *Dianthidium jugatorium* Graenicher, *Bull. Milwaukee Pub. Mus.*, I, p. 244.

This species was described by Say in the female sex only from specimens from "Missouri." Graenicher has recognized it from Wisconsin, where he found both sexes on *Helianthus strumosus* and *Heliopsis scabra*, the females collecting pollen. Before the writer is a series of eight males collected at Weeping Water and Union, Cass county, Nebraska, July 20 and 21, 1906, at flowers of *Helianthus divaricatus* and *Kuhnistera candida* (H. S. Smith). The male sex, which has never been described, may be recognized by the characters given in the table. The allotype is from Weeping Water, July 20, 1906, on *Helianthus divaricatus*.

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Dianthidium (Dianthidium) sayi Cockerell.

1824. *Megachile interrupta* Say, Long's Second Expedition, II, App., p. 351, ♀ ♂ (not *Megachile interrupta* Spinola, 1806).
1854. *Anthidium interruptum* Smith, *Cat. Hym. Brit. Mus.*, II, p. 214 (not *Anthidium interruptum* Fabricius, 1804).
1864. *Anthidium interruptum* Cresson, *Proc. Ent. Soc. Phil.*, II, p. 380, ♀ ♂.
1872. *Anthidium interruptum* Cresson, *Trans. Am. Ent. Soc.*, IV, p. 270, ♀ ♂.
1897. *Anthidium interruptum* Cockerell, *Canadian Entomologist*, XXIX, p. 223.
1898. *Anthidium curvatum* (= *interruptum*) Cockerell, *Bull. Sci. Lab. Denison Univ.*, XI, p. 62 (not *Anthidium curvatum* Smith, 1854).
1907. *Dianthidium sayi* Cockerell, *Canadian Entomologist*, XXIX, p. 136.
1907. *Dianthidium sayi* Cockerell, *Univ. of Colorado Studies*, IV, p. 250, ♀ ♂.

Western edge of the state and east along the Niobrara valley to Rock county, flying abundantly from June 25 to September 9, at flowers of *Helianthus annuus, Helianthus petiolaris, Helianthus maximiliani, Gutierrezia sarothrae, Solidago missouriensis, Vernonia fasciculata, Cleome serrulata, Kuhnistera candida, Verbena stricta* and *Mentzelia nuda*. Before the writer is a series of ninety females and fifty-four males collected at Warbonnet and Monroe canyons, Hat creek, Bad Lands, Glen and Crawford, in the Pine Ridge of Sioux and Dawes counties; Bridgeport, Morrill county, and Carns, Rock county. A male specimen from Colorado bears Gillette's No. 2243. This is the species recently (*Entomological News*, XXIII, p. 257) recorded as *D. curvatum* Smith (syn. *interruptum* Say) by Hungerford and Williams from western Kansas, the writer having examined the Thomas county male specimen. The species doubtfully recorded by these authors as *D. concinnum* Cresson is without question that species.

Dianthidium (Dianthidium) ulkei (Cresson).

1878. *Anthidium Ulkei* Cresson, *Trans. Am. Ent. Soc.*, VII, p. 115, ♀.
1897. *Anthidium pudicum* Cockerell, *Canadian Entomologist*, XXIX, pp. 272–273 (in part).

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1900. *Anthidium* (*Dianthidium*) *parvum* Cockerell, *Ann. Mag. Nat. Hist.*, series 7, V, p. 413 (in part).
1904. *Dianthidium ulkei* Cockerell, *Bull. Sou. California Acad. Sci.*, III, p. 6.
1909. *Dianthidium ulkei* Cockerell, *Entomological News*, XX, p. 261, ♀ ♂.

Abundant in the Pine Ridge of Sioux and Dawes counties, July 1 to August 20, at flowers of *Helianthus petiolaris, Gutierrezia sarothrae, Carduus plattensis, Vernonia fasciculata, Cleome serrulata* and *Monarda fistulosa*. A series of fifty-three females and twenty-four males is before the writer from Warbonnet and Monroe canyons, Glen and Crawford. In the clay buttes about Glen we found its resinous brood cells commonly in August, 1906, and bred the bees from them. A study of the series shows considerable variation, especially among the females, and in frequent cases there is a marked tendency to approach quite closely the maculations of *D. parvum* (Cresson). Typically and usually, the outer faces of the tibiae are bright yellow, but sometimes the black encroaches on the sides so as to reduce the yellow on the first four tibiae to mere broad stripes, while the posterior pair have large antero-median black areas, or, in the extreme of blackening, are black with the bases yellow and sending a yellow streak down the posterior face of the joint. Such specimens also have the emarginations of the band on tergite 1 cutting through and the spots on tergite 6 lacking, but as specimens of *ulkei* with the typical amount of yellow on the legs may also have tergite 1 three spotted and tergite 6 immaculate or with the spots much reduced, these differences are clearly within the individual variation within the species. None of the specimens have the yellow of the tibiae restricted to mere basal spots, as in *parvum* ♀, and the clypeus always has lateral yellow spots or bands, while in most specimens a yellow supraclypeal, vertical, postocellar or pleural spot or a yellow stripe on the anterior femora betray the insect at once as *ulkei*, all these markings being lacking in *parvum*. The male of *ulkei* differs at once from *parvum* ♂ in the quite different pygidium, *parvum* having distinct notches at the sides of the median apical tooth which are lacking in *ulkei*. We have

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taken *D. ulkei* in copula, both at Monroe canyon, Sioux county, Nebraska, and at Custer, South Dakota.

SPECIES FROM OUTSIDE NEBRASKA

Dianthidium (Dianthidium) simile (Cresson).

1878. *Anthidium simile* Cresson, *Proc. Ent. Soc. Phil.*, II., pp. 378–380, ♀ ♂.
1904. *Dianthidium simile* Cockerell, *Bull. Sou. California Acad. Sci.*, III, p. 6.
1908. *Dianthidium simile* Cockerell, *Proc. Ent. Soc. Wash.*, IX, p. 72.
1911. *Dianthidium simile* Cockerell, *Proc. U. S. Nat. Mus.*, XL, p. 248.
1911. *Dianthidium simile* Graenicher, *Bull. Milwaukee Pub. Mus.*, I, p. 244.

Two females collected at Port Hope, Ontario, July 28, 1895 (W. H. Harrington, Nos. 52 and 53) are evidently referable to *D. simile,* with which they agree in size (8 mm.), but the legs are darker than indicated in Cresson's description for *simile,* as only the knees and narrow stripes on the outer face of the first four tibiae, and a basal spot, produced behind, on posterior tibiae are yellow, while in typical *simile* the knees and outer faces of the tibiae and tarsi, except oblong black spots, are yellow; thus in the color of the legs the Ontario females agree more closely with *D. parvum.*

Dianthidium (Dianthidium) parvum (Cresson).

1878. *Anthidium parvum* Cresson, *Trans. Am. Ent. Soc.*, VII, p. 114, ♀ ♂.
1897. *Anthidium pudicum* Cockerell, *Canadian Entomologist,* XXXIX, pp. 272–273 (in part).
1900. *Anthidium (Dianthidium) parvum* Cockerell, *Ann. Mag. Nat. Hist.*, series 7, V, p. 413 (in part).
1909. *Dianthidium parvum* Cockerell, *Entomological News,* XX, p. 262.
1911. *Dianthidium parvum* Cockerell, *Proc. U. S. Nat. Mus.*, XL, p. 248.

A female from Laramie, Wyoming, agrees with Cresson's description of *parvum* except that it is 8 mm. long and the three spots on tergite 1 are very narrowly connected to form a band; the clypeus and tergite 6 are entirely black. This specimen is ex-

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ceedingly like the Ontario females above referred to *D. simile,* but the puncturation of the head and thorax is very much finer.

Dianthidium (Dianthidium) subparvum n. sp.

♀. Length 7 mm. Black; two spots on sides of clypeus, lateral face marks which are broad opposite clypeus but which abruptly narrow to mere lines that follow orbit nearly to summit, short narrow lines behind summits of eyes, spots on tubercles and tegulae, knees, short narrow stripes on bases of first four tibiae and spots at base of hind tibiae, lateral spots and a median line on abdominal tergite 1, deeply posteriorly emarginate and medially interrupted bands on tergites 2–4, and two large exteriorly emarginate spots on tergite 5, yellow. Vertex and mesoscutum very closely punctured, finely so on vertex. Pubescence pale, very sparse except for a rather copious patch on sides of propodeum. Ventral scopa and hair on inner side of basitarsi pale orange. Wings darkened, heavily so in marginal cell, nervures and stigma black.

♂. Length 8 mm. Black; clypeus, lateral face marks which narrow to lines before attaining tops of eyes, mandibles except tips, postorbital lines above, tubercles, edges of tegulae broadly, two small spots on anterior margin of mesoscutum, knees, stripes on outer faces of tibiae and basitarsi, three spots on abdominal tergite 1, broad bands on tergites 2–5, which are deeply indented or barely interrupted medially and very broadly and deeply emarginate on posterior margin laterally, yellow. Tergite 6 black and with a heavy median carina. Pygidium heavily medially carinate, the carina ending in a broad and slightly apically emarginate tooth, on either side of which are rather deep emarginations, the lateral lobes thus set off rounded and mostly yellow. Hind coxae with large stout yellow spines. Head and thorax densely but not coarsely punctured, abdomen very coarsely but not closely punctured, tergites 1–5 with the apical margins narrowly smooth, reflexed, testaceous and impunctate.

Type.—Pullman, Washington (C. V. Piper; Wash. Exp. Sta. No. 127), ♀.

Allotype.—Okanagon, British Columbia, August (W. H. Harrington, No. 54), ♂.

This species belongs to the *parvum* group. The female is of the size of *D. parvum* (Cresson), but may be separated at once by the wholly black mesoscutellum, lack of yellow spots on the anterior margin of mesoscutum, and the greatly reduced postorbital lines. By the same characters it may be separated from *D. simile* (Cresson). From *D. pudens* (Cresson) and the female of *D. pudicum* (Cresson), the deep yellow color of the ornaments sep-

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arates this species at once, while the immaculate mesoscutum and mesoscutellum further differentiate it. Of the two it is closest to *pudicum,* with which it agrees in the spotted clypeus and the complete though deeply emarginate bands on tergites 2–4. From *D. ulkei* (Cresson) and *D. consimile* (Ashmead) the restricted amount of yellow on the legs, lack of yellow supraclypeal, vertical or mesopleural spots, wholly black mesonotum and tergite 6, mostly black clypeus, etc., are diagnostic. The male that is placed here with the type female of *subparvum* resembles the males of *parvum* and *simile* very closely, and may possibly be a variation of *parvum,* but seems to be distinct in the unspotted mesoscutellum, heavily carinate sixth abdominal tergite and somewhat deeper emarginations on the sides of the median tooth of the pygidium. These emarginations are not, however, nearly so deep as in *pudicum* ♂. The scarcely emarginate pygidium of *ulkei* ♂ easily separates that species.

Dianthidium (Dianthidium) pudicum (Cresson).

1879. *Anthidium pudicum* Cresson, *Trans. Am. Ent. Soc.,* VII, p. 208, ♂.

1907. *Dianthidium pudicum* Cockerell, *The Entomologist,* XL, pp. 99–100, ♀.

1907. *Dianthidium pudicum* Cockerell, *Univ. of Colorado Studies,* IV, p. 250, ♀.

A series of three females, collected at Worland, Wyoming, July 1911 (L. Bruner), are referable to *D. pudicum.* They agree with Cockerell's description of *pudicum* ♀, only on the tibiae, especially the middle pair, there is a tendency to have the basal spots prolonged in narrow stripes part way down the outer face and sometimes the lateral part of the light marks on tergite 5 is represented by a small pale dot. With the three females is a male collected at the same time, and a second male is from Ute creek, Costilla county, Colorado, on sage flats, August 7, 1907 (R. W. Dawson). As Cockerell has stated (*Proceedings U. S. National Museum,* XL, p. 248) the male of *D. pudicum* can be separated from *D. parvum* ♂ by the deeper notches on the sides of the median apical tooth of the pygidium.

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Dianthidium (Dianthidium) perpictum coloradense n. subsp.

♀. Length 10 mm. Stout, black; clypeus except a large trapezoidal basal area, lateral face marks extending rather broadly nearly to summit of eyes, short lines behind eyes above, large L-shaped marks on antero-lateral margins of mesoscutum which extend inward one-third across anterior margin of mesoscutum and caudad along lateral margin to axillae, small spots on tubercles, spots on axillae, a narrowly medially interrupted band on mesoscutellum, lines on femora beneath, knees, short stripes on the outer face of first four tibiae and bands on abdominal tergites 1–5, which are rather broadly interrupted on 1 and 2, narrowly interrupted on 3, complete but medially incised anteriorly on 4 and 5 and including all of 6, yellow. Tegulae red. Legs, except yellow markings above mentioned, and black coxae, trochanters and femora, red. Head strongly but not densely punctured, mesoscutum shallowly subcancellately punctured, abdomen shallowly and rather closely punctured, the apical rims of tergites 1–5 reflexed. Wings fuliginous, nervures and stigma black. Pubescence very sparse and thin, all whitish. Ventral scopa white.

Type.—Colorado Springs, Colorado, ♀.

This form is larger than typical *D. perpictum,* and further differs in the clear red tibiae and tarsi (which are only faintly suffused with blackish on last four tibiae behind), more extensively yellow clypeus and yellow-spotted axillae; possibly it may prove to be distinct. It is too large for *D. jugatorium* (Say) or the female of *D. lepidum* (Cresson).

Subgenus **Anthidiellum** Cockerell, 1904

KEY TO THE NEBRASKA SPECIES

Female

Abdominal tergite 1 with large spots on extreme sides, 2 with a complete or very narrowly interrupted and posteriorly deeply emarginate band, 4–6 each with two more or less exteriorly emarginate discal spots, yellow; a triangular mark on each side of face, a transverse band across hind margin of vertex, two oblong spots on anterior edge of mesoscutum, tubercles, spot on tegulae, narrow post-tegular line, usually small spots on the axillae and always two large spots on the mesoscutellum, also yellow; apical half of tergite 6 medially carinate; tibiae and tarsi wholly red; 8 mm..... *boreale*

Male

Abdominal tergites 6 and 7 medially carinate, 7 broadly bilobed on apical margin and with its carina ending in a tubercle; face below antennae

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wholly yellow and tergite 7 yellow except at base, otherwise ornamented as in the female; legs red, the anterior and middle knees and the basitarsi yellow or yellowish; antennae black; 8 mm.....*boreale*

Dianthidium (Anthidiellum) boreale Robertson.

1902. *Dianthidium boreale* Robertson, *Canadian Entomologist,* XXXIX, p. 323, ♂.

1903. *Dianthidium boreale* Robertson, *Trans. Am. Ent. Soc.,* XXIX, p. 175, ♂.

Found in Sioux county, Nebraska, and probably east along the Niobrara valley to Niobrara, Knox county, where specimens have been collected. Monroe canyon, Glen, and Niobrara, Nebraska, August 9–14, at flowers of *Kuhnistera purpurea* and *Cleome serrulata.* The species is not common and is represented by only two female and three male specimens. The female, which is undescribed, agrees exactly with Cresson's description of *D. notatum* (Latreille), but tergite 6 is carinate on the apical half and has two yellow spots (wholly black in *notatum*), the tibiae and tarsi are wholly clear red (exteriorly obfuscated in *notatum*), and the clypeus is wholly black (broadly yellowish red on lateral margins in *notatum*). The allotype is from Glen, Sioux county, Nebraska, 4,000 feet, August 14, 1906, and was taken on a day following the capture of a male in the same locality.

Subgenus **Heteranthidium** Cockerell, 1904

KEY TO THE NEBRASKA SPECIES

Female

Abdominal tergites 1–5 with broad deep yellow bands which are medially attenuated but not interrupted and not emarginate; clypeus and triangular lateral face marks which extend narrowly above level of antennae, whitish; broad lines behind eyes, four spots on mesoscutellum, large subtriangular areas on antero-lateral margin of mesoscutum which are sometimes reduced to small spots over tegulae, spot on front of tegulae, and spots on bases of all of the tibiae, deep yellow; 13–16 mm..*zebratum*

Male

Abdominal tergites 1–6 with broad deep yellow bands which are medially attenuated but not interrupted and not emarginate on the disk or but very feebly so on tergites 1–3; clypeus, mandibles except tips, and lateral

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face marks which extend in a narrow line above level of antennae, whitish; sometimes lines behind eyes, always two large spots on mesoscutellum and usually two small dots just outside them, stripe on anterior femora beneath, bases and apices of the tibiae usually connected by a narrow stripe at least on posterior pair, and all of the basitarsi, yellow; pygidium with a yellow spot and terminating in a very stout short blunt spine; 13–16 mm.....*zebratum*

Dianthidium (Heteranthidium) zebratum Cresson.

1872. *Anthidium zebratum* Cresson, *Trans. Am. Ent. Soc.,* IV, p. 270, ♂.

1902. *Protanthidium cockerelli* Titus, *Entomological News,* XIII, pp. 170–171, ♂ (?).

1909. *Heteranthidium zebratum* Cockerell, *Entomological News,* XX, p. 261.

This handsome species was described from a single male from Texas, but was also recorded from Colorado at the time of description by Cresson. Later Cockerell has recorded it from Boulder, Colorado, where it visits *Helianthus pumilus* during latter August. Titus described *cockerelli* from two male cotypes taken at Rocky Ford and Virginia Dale, Colorado, August 10 and September 3, the latter specimen on *Rudbeckia hirta.* Numerous specimens in the large series of *zebratum* before the writer differ in no way from the description of this species, and probably *cockerelli* is a synonym of *zebratum. D. zebratum* occurs in western and central Nebraska, and is especially common in Sioux and Dawes counties, where it has been collected at Jim creek, Monroe canyon, Sowbelly canyon, Harrison, Glen, Crawford, and in the Hat creek Bad Lands, July 26 to August 27 at flowers of *Helianthus annuus, Helianthus petiolaris* and *Gutierrezia sarothrae.* Other Nebraska specimens come from Haigler, Dundy county, and from Halsey, Thomas county, at the latter locality on *Helianthus petiolaris* and *Helianthus subrhomboideus.* Also, eight brood cells, which from their large size almost certainly belong to this species, were collected in Cherry county by J. M. Bates and are now before the writer; they are elongate oval, resinous cells, possibly formed from the resinous exudations of the sunflowers which this bee seems so fond of visiting.

This species occurs also at Custer, South Dakota, and the male

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of a pair from that locality bears Bruner's No. 18, and is the same as the male recorded as *D. occidentale* Cresson by Cockerell in *Annals and Magazine of Natural History,* series 7, V, p. 414. *D. zebratum* is, however, quite distinct from *D. occidentale,* averaging distinctly larger in both sexes (*occidentale* is only 10–12 mm. long), while the female further differs in the presence of four spots on the mesoscutellum the inner pair of which are very large and oval (only two round spots on the mesoscutellum in *occidentale* ♀), of distinct yellow spots externally on the tibial bases (wanting in *occidentale* ♀), and of continuous and not discally emarginate yellow abdominal bands (interrupted on tergite 1 and emarginate on disks 1–3 in *occidentale* ♀), while the male further differs in having the lateral face marks much more abruptly narrowed at level of insertion of antennae, being continued upward as a mere line contiguous to orbit (broadly so in *occidentale* ♂), in having always two large yellow spots on the mesoscutellum and usually also two smaller yellow dots outside this pair (mesoscutellum wholly black in *occidentale* ♂), in having the anterior femora almost always with an extensive yellow stripe or area beneath (lacking in *occidentale* ♂), in having the abdominal bands not emarginate on first four tergites or but very feebly so on first two or three (distinctly emarginated bands on tergites 1–4, deeply so on 1 and 2, in *occidentale* ♂), and having the pygidium usually with a yellow spot, subtriangular, and terminating in a stout, blunt median spine while the sides have prominent angles (*occidentale* ♂ has the pygidium black, medially carinate, and terminating medially in a broad shallow sinus). The female of *D. zebratum* has never been described but may readily be known by the characters given in the above comparison with *occidentale,* and the diagnosis given in the table. The allotype was collected by the writer at Glen, Sioux county, 4,000 feet, August 18, 1906 on *Gutierrezia sarothrae* in company with typical males.

Among the other *Heteranthidium, zebratum* is closest to *chippewaense* Graenicher, but differs in the male by the presence of the yellow spots on the mesoscutellum, the always complete band on tergite 1, the lack of distinct emargination anteriorly on

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the bands of tergites 1–4, and the non-carinate pygidium; the female may be separated by the whitish color of the clypeus and lateral face marks and the presence of four yellow spots on the mesoscutellum instead of only two. *D. chippewaense* also visits *Rudbeckia hirta.* From *D. harbecki* Crawford, *zebratum* differs in the lack of yellow lines on the disk and sides of mesoscutum and on pleura, the complete band on tergite 1, the mostly dark tibiae, the shorter lateral face marks, etc. From *D. dorsale* (Lepeletier), it differs in the mostly black cheeks, wholly black scape, lack of reddish on the anterior and lateral margins of the mesoscutum and on mesoscutellum, etc. From *D. larreae* Ckll., it may be told at a glance by the mostly black cheeks and vertex.

SPECIES FROM OUTSIDE NEBRASKA

Dianthidium (Heteranthidium) occidentale Cresson.

1868. *Anthidium occidentale* Cresson, *Trans. Am. Ent. Soc.,* I, pp. 386–387, ♀ ♂.

1900. *Anthidium occidentale* Cockerell, *Ann. Mag. Nat. Hist.,* XI, p. 414, ♀ ♂.

1907. *Anthidium occidentale* Cockerell, *Univ. of Colorado Studies,* IV, pp. 249–259, ♀ ♂.

This species was described from eight cotypes, four of each sex, collected in New Mexico by Dr. Samuel Lewis, and was also recorded from Colorado. Later, Cockerell recorded the capture of both sexes at Sapello canyon and San Ignacio, New Mexico, and still later at Boulder, Colorado. Before the writer are two typical males, one from Fort Garland, Colorado, August 9, 1907, on *Chrysothamnus* (L. Bruner), and the other from Ute creek, 9,000 feet, August 12, 1907 (R. W. Dawson).

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II.—REVISIONS OF SOME PLANT PHYLA

BY CHARLES E. BESSEY

In the time that has elapsed since the publication of my "Synopsis of Plant Phyla" (University Studies, Vol. VII, No. 4) it has been possible to make many changes in the arrangement of the orders and families of several of the phyla. On account of their considerable number it is desirable to present these changes in one paper so as to accomplish the revision of the original paper with as little confusion as possible.

The Plant World is here regarded as readily separable into fourteen Phyla (often called "Branches" or "Divisions"). These are subdivided into Classes, and these again into Orders, and the latter into Families. The latest enumeration of the species of plants shows that we now know approximately a quarter of a million recognizable forms. These numerical data may be shown concisely in tabular form as follows:

		Classes.	Orders	Families	Approximate No Species
1.	Myxophyceae	2	4	18	2,020
2.	Protophyceae	2	7	16	1,090
3.	Zygophyceae	2	4	21	7,000
4.	Siphonophyceae	3	9	26	1,260
5.	Phaeophyceae	3	5	24	1,030
6.	Rhodophyceae	2	7	24	3,050
7.	Carpomyceteae	3	29	146	64,000
8.	Bryophyta	2	7	65	16,600
9.	Pteridophyta	2	5	13	3,800
10.	Calamophyta	3	3	4	24
11.	Lepidophyta	2	3	7	700
12.	Cycadophyta	4	6	13	140
13.	Strobilophyta	1	2	9	400
14.	Anthophyta	2	32	300	132,500
	Total	33	123	686	233,614

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These phyla may be characterized in a general way as follows by means of an analytical key, in which only the general or typical characters are indicated. In making use of it, it must be remembered that many variations ("exceptions") occur in every phylum.

KEY TO THE PHYLA OF PLANTS

A. Cells typically with poorly developed nuclei and chromatophores; reproducing by fission and spores; mostly blue-green, brown-green or fuliginous (or colorless), never chlorophyll-green.
  I. Unicellular to filamentous plants — Phylum 1. MYXOPHYCEAE.

B. Cells typically with well-developed nuclei and chromatophores (chloroplasts); reproducing by fission and spores, and mostly by gametes also; chlorophyll-green, sometimes hidden by other coloring matter (or colorless).
  I. Plants usually of but one obvious generation, typically aquatic.
    a. The fertilized egg developing into a zygote only.
      1. Unicellular, to filamentous, many-celled plants (rarely a plate of cells); isogamic to heterogamic, one or both gametes ciliated. — Phylum 2. PROTOPHYCEAE.
      2. Filamentous many-celled plants, mostly breaking up early into single cells; isogamic, gametes not ciliated. — Phylum 3. ZYGOPHYCEAE.
      3. Tubular filamentous (or saccate) coenocytic plants, usually attached basally by rhizoids; isogamic to heterogamic. — Phylum 4. SIPHONOPHYCEAE.
      4. Cellular filamentous (rarely unicellular) to massive plants, attached basally by rhizoids (or roots); isogamic to heterogamic; the green color hidden by a brownish pigment. — Phylum 5. PHAEOPHYCEAE.
    b. The fertilized egg developing into a spore-fruit.
      1. Cellular filamentous to massive holophytic plants, attached basally by rhizoids (or roots); heterogamic; the green color mostly hidden by a red or purple pigment. — Phylum 6. RHODOPHYCEAE.
      2. Cellular filamentous hysterophytic plants, often much degenerated, without chlorophyll; heterogamic. — Phylum 7. CARPOMYCETEAE.
  II. Plants of two obvious, alternating generations, typically terrestrial.
    a. Gametophyte generation larger, and longer-lived than the dependent sporophyte generation.
      1. Gametophytes from prostrate and thalloid to erect leafy shoots; sporophytes globose to cylindrical or stalked, neither expanded nor rooted. — Phylum 8. BRYOPHYTA.

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b. Gametophyte generation smaller and shorter-lived than the independent sporophyte generation.

1. Both generations mostly holophytic, independent of one another.

(a) Gametophytes typically flat and thalloid, normally attached by rhizoids, mostly monoecious; sporophytes consisting of large-leaved, solid stems, which are rooted below.

Phylum 9. PTERIDOPHYTA.

(b) Gametophytes typically flat and thalloid, normally attached by rhizoids, mostly monoecious; sporophytes consisting of mostly solid, cylindrical, jointed and fluted stems, bearing small, whorled leaves at the nodes, and rooted below. Phylum 10. CALAMOPHYTA.

(c) Gametophytes typically tubular or globose, with few rhizoids or none, often dioecious; sporophytes consisting of solid, cylindrical, continuous (not jointed) and not fluted stems, bearing small spirally arranged (or opposite) leaves, and rooted below.

Phylum 11. LEPIDOPHYTA.

2. Gametophytes hysterophytic, dependent upon and nourished by the sporophyte.

(a) Sporophylls open, ovules and seeds naked (gymnospermous).

(1) Gametophytes dioecious; sperms ciliated and motile; sporophytes producing microspores and megaspores in spiral or whorled sporophylls, or these aggregated into cones. Phylum 12. CYCADOPHYTA.

(2) Gametophytes dioecious; sperms not ciliated, not motile; sporophytes with sporophylls in cones.

Phylum 13. STROBILOPHYTA.

(b) Sporophylls closed, ovules and seeds covered (angiospermous).

(1) Gametophytes dioecious; sperms not ciliated, not motile; sporophytes with sporophylls in flowers.

Phylum 14. ANTHOPHYTA.

In this paper only the 4th, 6th, 7th, 12th and 14th phyla stand sufficiently in need of revision to warrant rewriting in this article. As in the original the figures in parentheses refer to volume, parts and pages of Engler and Prantl's "Natürlichen Pflanzenfamilien." In a few cases the citation is to Engler's "Syllabus," seventh edition.

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Phylum IV. **SIPHONOPHYCEAE.** The Tube Algae.

Plants coenocytic, filamentous, or saccate, often much branched, and usually basally attached by rhizoids, from septate (consisting of rows of coenocytes) to non-septate, the filaments single or aggregated into a plant body of definite form; chromatophores discoid or reticulated, parietal; propagation by (1) the internal division of the protoplasm of a part (sporangium), or of the whole plant into spores,—in water into zoospores,—in the air into walled spores; or by (2) the contraction of definite masses of protoplasm into agamic resting-spores (aplanospores or chlamydospores); generation by the union of (1) ciliated isogametes, (2) ciliated heterogametes, or (3) sperms with non-ciliated gynogametes (eggs), or of (4) antherid nuclei (non-ciliated) with eggs, in all cases producing zygotes. Typically freshwater and marine algae (holophytes), from which many filamentous fungi (hysterophytes) have been derived.

Class 7. VAUCHERIOIDEAE. Lower Tube Algae. Plants filamentous, septate or tubular. (About 800 species.)

Order CLADOPHORALES. The Cladophoras. Filaments septate, the segments coenocytic.

Family 1. **Cladophoraceae.** Filaments simple or branched, basally attached; isogamic. *Rhizoclonium, Cladophora, Pithophora.* (Pf. I, 2, 114.)

Family 2. **Sphaeropleaceae.** Filaments simple, unattached, heterogamic. *Sphaeroplea.* (Pf. I, 2, 121.)

Order SIPHONALES. Green Felts. Filaments tubular, irregularly branched; chlorophyllose holophytes.

Family 3. **Phyllosiphonaceae.** Endophytic and parasitic in the tisssues of higher plants. *Phyllosiphon.* (Pf. I, 2, 125.)

Family 4. **Codiaceae.** Compound Green Felts. Filaments compacted into a large plant body; isogamic; marine. *Codium, Penicillus, Udotea, Halimeda.* (Pf. I, 2, 138.)

Family 5. **Vaucheriaceae.** Simple Green Felts. Filaments single, free; heterogamic; in fresh or brackish waters, or on wet earth. *Vaucheria.* (Pf. I, 2, 131.)

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Class 8. PHYCOMYCETEAE. Tube Fungi. Lower Fungi. Filaments tubular, irregularly branched, chlorophyll-less.

Order SAPROLEGNIALES. Typically aquatic; mostly saprophytic; forming zoospores in zoosporangia.

Family 6. **Monoblepharidaceae.** Filaments simple or branched, septate above, tubular below, colorlesss; propagation by uniciliated zoospores; generation heterogamic, the sperms uniciliated, the eggs non-ciliated, and remaining in the oogone. Small, saprophytic aquatic fungi. *Monoblepharis.* (Pf. I, 1, 106.)

Family 7. **Saprolegniaceae.** Water Molds. Aquatic, well-developed, free branched, parasitic or saprophytic filaments, attached by endogenous rhizoids; zoospores biciliated; eggs 1 to several in each oogone; antherids not producing sperms. *Saprolegnia, Achlya.* (Pf. I, 1, 93.)

Family 8. **Pythiaceae.** Aquatic or terrestrial, saprophytes or parasites, the slender filaments without rhizoids; zoospores biciliated; eggs single; antherids not producing sperms. *Pythium.* (Pf. I, 1, 104.)

Family 9. **Cladochytriaceae.** Aquatic, endogenous, branched parasitic filaments, with no rhizoids. *Cladochytrium.* (Pf. I, 1, 80.)

Family 10. **Ancylistaceae.** Aquatic, endogenous, simple, few celled parasitic filaments, with no rhizoids. *Lagenidium, Rhizomyxa.* (Pf. I, 1, 89.)

Order PERONOSPORALES. Non aquatic, mostly parasitic in the tissues of higher plants, usually forming zoospores in conidia.

Family 11. **Albuginaceae.** White Rusts. Conidia in chains, forming zoospores; parasites in the tissues of higher plants. *Albugo.* (Pf. I, 1, 110.)

Family 12. **Peronosporaceae.** Downy Mildews. Conidia singly terminal on branched conidiophores, mostly forming zoospores; parasitic in the tissues of higher plants. *Phytophthora, Plasmopara, Peronospora.* (Pf. I, 1, 112.)

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Order MUCORALES. Typically non aquatic; saprophytic or parasitic on other fungi; not producing zoospores, but spores in sporangia, or singly, or in chains.

Family 13. **Mucoraceae.** Black Molds. Sporangia with a columella. *Rhizopus, Mucor, Pilobolus.* (Pf. I, 1, 123.)

Family 14. **Mortierellaceae.** Sporangia without a columella. *Mortierella.* (Pf. I, 1, 130.)

Family 15. **Chaetocladiaceae.** Spores single, or more or less clustered on much branched conidiophores. *Chaetocladium.* (Pf. I, 1, 131.)

Family 16. **Piptocephalidaceae.** Spores in chains, clustered on the ends of branches. *Piptocephalis, Syncephalis.* (Pf. I, 1, 132.)

Order ENTOMOPHTHORALES. Non aquatic; mostly parasitic in the bodies of insects, not producing zoospores.

Family 17. **Entomophthoraceae.** With the characters of the order. *Entomophthora.* (Pf. I, 1, 134.)

Class 9. BRYOPSIDOIDEAE. Higher Tube Algae. Plants globular to stipitate, or dendroid, septate or continuous. (About 460 species.)

Order VALONIALES. Globular, mostly terrestrial coenocytes, to compound septate marine plants; isogamic.

Family 18. **Botrydiaceae.** Little Bladder Algae. Minute globular or ovoid, mostly terrestrial plants chlorophyll-bearing. *Botrydium, Protosiphon.* (Pf. I, 2, 123.)

Family 19. **Chytridiaceae.** Minute globular or ovoid colorless plants, mostly epiphytic. *Rhizidium, Chytridium.* (Pf. I, 1, 64.)

Family 20. **Valoniaceae.** Large Bladder Algae. Plants filamentous and non-septate when young, basally attached by rhizoids, usually becoming septate and branched, and often compound when mature, the segments coenocytic. *Valonia, Struvea, Halicystis.* (Pf. I, 2, 145.)

Order DASYCLADALES. Non-septate, regularly branched marine plants; isogamic.

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Family 21. **Derbesiaceae.** Plants filamentous, sparingly dichotomous, erect, with basal rhizoids, zoospores multiciliated. *Derbesia.* (Pf. I, 2, 129.)

Family 22. **Bryopsidaceae.** Sea Ferns. Plants pinnately branched, erect, with basal rhizoids; gametes biciliated. *Bryopsis.* (Pf. I, 2, 127.)

Family 23. **Caulerpaceae.** Caulerpas. Plants large, branched, creeping, with lateral rhizoids and bearing erect, usually pinnate "leaves." *Caulerpa.* (Pf. I, 2, 134.)

Family 24. **Dasycladaceae.** Sea Umbrellas. Plants erect, regularly branched in whorls, with basal rhizoids. *Botryophora, Acetabularia.* (Pf. I, 2, 152.)

Order CHARALES. The Stoneworts. Green plants consisting of erect rooted, septate, dendroid stems, bearing whorled branches. Stems and branches composed of large, long coenocytes which are often covered (corticated) with smaller coenocytes. Antheridial branches compounded into a globular structure containing many sperm-bearing filaments, the true antherids; sperms biciliated; oogone rounded, covered with a twisted layer of protective cells, terminating in a 5 or 10 celled crown.

Family 25. **Nitellaceae.** Crown of oogone composed of ten cells. *Nitella, Tolypella.* (Pf. I, 2, 172.)

Family 26. **Characeae.** Crown of oogone composed of five cells. *Chara, Tolypelopsis, Lamprothamnus, Lychnothamnus.* (Pf. I, 2, 174.)

Phylum VI. **RHODOPHYCEAE.** The Red Algae.

Plants aquatic, from filamentous to erect, well differentiated stems, which are rooted below and sometimes bear flat, leaf-like structures; propagation by non-motile tetraspores, or by simple fragmentation of the plant body; generation by heterogametes, the fertilized egg developing into one or more (often many) spores, which are enclosed in a sterile tissue, the whole constituting a primitive fruit. In addition to chlorophyll the plants of

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this phylum, nearly all of which are marine, contain phycoerythrin in their cells, which gives them a red or purple color.

Class 13. BANGIOIDEAE. Antherids and oogones developed from ordinary cells of the plant body by a slight enlargement, the former producing non-ciliated sperms, and the latter scarcely differentiated single eggs; no trichogyne. Species about 50, doubtfully referred to this phylum.

Order BANGIALES. Plants filamentous or stratose; propagation by monospores (undivided tetraspores); chromatophore one in each cell, stellate.

Family 1. **Bangiaceae.** Composed of a few genera, and from forty to fifty species, including the edible "laver" (species of *Porphyra*). (Pf. I, 2, 307.)

Order RHODOCHAETALES. Plants filamentous, erect, branched; propagation by monospores; chromotophores several to many in each cell.

Family 2. **Rhodochaetaceae.** Filaments not corticated. But one genus, *Rhodochaete,* containing a single marine species. (Pf. I, 2, 316.)

Family 3. **Campsopogonaceae.** Filaments corticated. But one genus, *Campsopogon,* containing a few freshwater species. (Pf. I, 2, 318.)

Class 14. FLORIDEAE. Red Seaweeds. Antherids composed of definite groups of cells, superficial or on branches, producing non-ciliated sperms; oogone a single cell prolonged above into a long fine hair, the trichogyne, and containing a definite egg in its base. (Species about 3,000.)

Order NEMALIONALES. Lower Red Seaweeds. Mostly filamentous plants: the fertilized oogone gives rise directly to the erect or more or less spreading, tufted sporophores ("gonimoblasts"), which are naked, or enclosed in a protective envelope.

Family 4. **Lemaneaceae.** Plants consisting of delicate branching threads, living in fresh water. *Lemanea.* (Pf. I, 2, 324.)

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Family 5. **Helminthocladiaceae.** Plants filamentous, simple or parenchymatous, variously branched, usually slimy and sometimes encrusted with lime; mostly marine. *Batrachospermum* (in fresh water), *Nemalion, Liagora.* (Pf. I, 2, 327.)

Family 6. **Thoreaceae.** Plants erect, filamentous, simple or branched, covered with parallel hairs, living in fresh water. *Thorea* is the only genus. (Pf. I, 2, 321.)

Family 7. **Chaetangiaceae.** Plants varying from dichotomously branching, rounded stems to more or less flattened, massive, leaf-like structures; all marine. *Chaetangium.* (Pf. I, 2, 325.)

Family 8. **Gelidiaceae.** Plants ranging from minute epiphytes to slender and gracefully branched forms, and stout branched parenchymatous masses, all marine, and a few species (of *Choreocolax*) parasitic and colorless. *Wrangelia, Gelidium.* (Pf. I, 2, 340.)

Order CRYPTONEMIALES. Hard Red Seaweeds. Plants filiform, branched, often complanate; oogones and auxiliary cells separated; the fertilized egg conjugates with the remote auxiliary cell by means of its long branching filament ("ooblastema"); the auxiliary cell then gives rise to the sporophores.

Family 9. **Gloiosiphoniaceae.** Plants terete or complanate, forked or laterally branched, more or less filamentous internally. *Gloiosiphonia, Gloiopeltis.* (Pf. I, 2, 505.)

Family 10. **Grateloupiaceae.** Plants terete or angled, complanate or foliaceous, variously forked, or more commonly laterally branched, more or less filamentous internally. *Halymenia, Grateloupia, Cryptonemia.* (Pf. I, 2, 508.)

Family 11. **Dumontiaceae.** Plants terete, complanate, or foliaceous, forked or laterally branched, more or less tubular internally. *Dumontia, Dudresnaya.* (Pf. I, 2, 515.)

Family 12. **Nemastomacae.** Plants terete, complanate, or foliaceous, variously forked or laterally branched, more or less filamentous internally. *Schizymenia, Nemastoma.* (Pf. I, 2, 521.)

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Family 13. **Rhizophyllidaceae.** Plants terete or compressed, sometimes articulate-constricted, sometimes creeping; structure mostly filamentous. *Chondrococcus, Rhizophyllis.* (Pf. I, 2, 527).

Family 14. **Squamariaceae.** Plants usually minute, foliaceous, or crustiform, attached by rhizoids on their lower surface, usually encrusted with lime. *Peyssonellia.* (Pf. I, 2, 532.)

Family 15. **Corallinaceae.** Corallines. Plants from filamentous, more or less branched (and then jointed) to foliaceous or crustaceous, always encrusted with lime. *Corallina, Melobesia.* (Pf. I, 2, 537.)

Order CERAMIALES. "Sea Mosses." Filiform to foliaceous plants: sporophores produced by nearby auxiliary cells. Here are to be found the most beautiful forms of the Red Seaweeds.

Family 16. **Delessariaceae.** Plants foliaceous, often with midribs, and regular netted patterns. Here are some of the most beautiful of the red seaweeds. *Nitophyllum, Grinnellia, Delessaria.* (Pf. I, 2, 406.)

Family 17. **Bonnemaisoniaceae.** Plants consisting of long, slender main stems covered with filamentous branches. *Bonnemaisonia.* (Pf. I, 2, 417.)

Family 18. **Rhodomelaceae.** Plants cylindrical or flattened, mostly much branched, often foliaceous; structure mostly parenchymatous and polysiphonous. *Polysiphonia, Rhodomela, Dasya.* (Pf. I, 2, 421.)

Family 19. **Ceramiaceae.** Plants filiform, sometimes corticated, mostly laterally branched, complanate. *Lejolisia, Callithamnion, Ptilota, Ceramium.* (Pf. I, 2, 481.)

Order GIGARTINALES. Soft Red Seaweeds. Parenchymatous plants; the fertilized oogone conjugates with its nearby auxiliary call; the latter then gives rise to the sporophores which branch copiously in the surrounding tissues of the plant body.

Family 20. **Acrotylaceae.** Plants parenchymatous, erect, branching, flattish; tetraspores zonate. *Acrotylus.* (Pf. I, 2, 350.)

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Family 21. **Gigartinaceae.** Plants parenchymatous, erect or spreading, branching, cylindrical, flattened, or leaf-like; tetraspores cruciate. *Chondrus, Iridaea, Gigartina, Callophyllis, Callymenia.* (Pf. I, 2, 352.)

Family 22. **Rhodophyllidaceae.** Plants parenchymatous, erect or spreading, branching, flattened, or less commonly leaf-like; tetraspores zonate. *Rhodophyllis, Rhabdonia.* (Pf. I, 2, 366.)

Order RHODYMENIALES. Higher Red Seaweeds. Filiform to foliacious and massive plants; the fertilized oogone conjugates with its nearby auxiliary cell; the latter then gives rise to the sporophores which grow outward in the plant body.

Family 23. **Sphaerococcaceae.** Plants not foliaceous, much branched, often robust and of dense texture. *Gracilaria, Hypnea.* (Pf. I, 2, 382.)

Family 24. **Rhodymeniaceae.** Plants from filiform to cylindrical-branched, flattened, and foliaceous. *Rhodymenia, Champia, Plocamium.* (Pf. I, 2, 396.)

Phylum VII. **CARPOMYCETEAE.** The Higher Fungi.

Plants terrestrial or aerial, filamentous, sometimes compacted into a definite plant body, always destitute of chlorophyll, and so parasitic or saprophytic; propagation by the separation of special cells (conidia), and the production of thick walled cells (chlamydospores) in the plant body; generation (where known) by the union of the protoplasm of an antherid with the protoplasm (egg) of an oogone, and the production of a fruit-body (spore-fruit, or sporocarp) consisting of sporogenous and sterile tissues.

Terrestrial or epiphytic plants for the most part, a few being aquatic, or epizoic. (About 64,000 species.)

Several years ago Dr. Ernst A. Bessey, then in the service of the United States Department of Agriculture in Miami, Florida, now Professor of Botany in the Michigan Agricultural College, in discussing the origin of the Higher Fungi made the suggestion that the earliest forms were probably of the "lichen" kinds, and that the phylum had reached its present development through them. In other words instead of considering the "lichens" as derived from the fungi by the adoption of a peculiar kind of parasitism, we are to look upon the ordinary fungi as derived from, that is, developed from, the "lichens." According to this view the "lichens"

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are the primitive *Carpomyceteae,* and it is through them that the higher forms have been derived. Dr. Bessey presented these views in a paper entitled "A Suggestion as to the Phylogeny of the Ascomycetes" read before the Botanical Society of America in its meeting in Cleveland, on January 2, 1913, and subsequently published in *Mycologisches Centralblatt,* Vol. III.

Manifestly such a theory of the origin of the Higher Fungi necessitates a considerable rearrangement of their orders and families, so as to indicate their phyletic taxonomy. For several years I have given this matter consideration, and have ventured to construct a genealogical tree involving this theory of the "lichen" origin of the *Carpomyceteae,* and have arrived at a fairly satisfactory arrangement of the orders. I have not yet ventured upon a rearrangement of the families in these orders, because of the appalling multiplicity of details confronting me. In this tree the main stem is made up of the *Discolichenes,* from which are derived such fungal and "lichen" orders as *Caliciales, Phacidiales, Graphidales* and *Hysteriales.* These again give rise to other less primitive orders, all characterized by the production of ascospores, and constituting the lower class *Ascosporeae.* From this class by further modification have come the two classes *Basidiosporeae* and *Teliosporeae.*

The taxonomy of the Carpomyceteae in my paper entitled "A Synopsis of Plant Phyla," published in these Studies (Vol. VII, No. 4) nearly six years ago, was based upon the usual theory that the "lichens" are modified, or at least peculiar fungi. The time has now come for a rearrangement based upon the new theory. Accordingly on the pages following, such a rearrangement is given, with a few additions and some slight modifications of some of the descriptions.

Class 15. ASCOSPOREAE. Ascus Fungi. Spore-fruits spherical, cup-shaped, or irregular, simple or compound, always including one or more spore-sacs (asci) containing spores (ascospores). (About 29,000 species.)

Order LABOULBENIALES. Beetle Fungi. Plants minute, few-celled, erect, attached below, and bearing one or more antherids and oogones, which produce one or more simple, ascigerous fruits.

Family 1. **Laboulbeniaceae.** Plants parasitic upon insects (mostly upon beetles) or at least attached to them. More than fifty genera, and about five hundred species are known. *Laboulbenia, Ceratomyces, Dichomyces.* (Pf. I, 1, 491.)

Order DISCOLICHENES. Disk Lichens. Plants parasitic upon lower green plants (mostly Myxophyceae and Protophyceae) and thus constituting "lichens." Apothecia circular, typically cup-shaped or plate-shaped. (The hosts are still known as "gonidia.")

Family 2. **Lecanactidaceae.** Crustaceous lichens with *Trente-*

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pohlia gonidia; apothecia sessile or sunken. *Lecanactis.* (Pf. I, 1*, 114.)

Family 3. **Pilocarpaceae.** Crustaceous lichens with *Protococcus* gonidia; apothecia at first sunken, later emergent. *Pilocarpon.* (Pf. I, 1*, 116.)

Family 4. **Chrysothricaceae.** Spongy lichens with *Palmella* gonidia; apothecia sunken, disk-form, with a margin. *Chrysothrix.* (Pf. I, 1*, 117.)

Family 5. **Thelotremataceae.** Crustaceous lichens with *Trentepohlia* gonidia; apothecia sunken, surrounded by a thalline margin. *Orcellularia, Thelotrema.* (Pf. I, 1*, 118.)

Family 6. **Diploschistaceae.** Crustaceous, stratified lichens with *Protococcus* gonidia; apothecia sunken or erumpent, margined. *Diploschistes.* (Pf. I, 1*, 121.)

Family 7. **Ectolechiaceae.** Crustaceous lichens with *Protococcus* gonidia; apothecia sunken to sessile, small, not margined. *Sporopodium.* (Pf. I, 1*, 122.) Growing on leaves.

Family 8. **Gyalectaceae.** Crustaceous lichens with *Trentepohlia, Phyllactidium,* or rarely *Scytonema* gonidia; apothecia simple, sunken to sessile, margin weak, bright-colored to carbonaceous. *Gyalecta.* (Pf. I, 1*, 124.)

Family 9. **Coenogoniaceae.** Spongy lichens with *Trentepohlia* or *Cladophora* gonidia; apothecia margined, sessile or short-stalked. *Coenogonium.* (Pf. I, 1*, 127.)

Family 10. **Lecidiaceae.** Crustaceous lichens with *Gloeocapsa*-like, or *Protococcus* gonidia; apothecia sessile, less commonly sunken, or short-stalked. *Lecidia, Bacidia, Toninia.* (Pf. I, 1*, 129.)

Family 11. **Phyllopsoraceae.** Scaly to foliose lichens with *Pleurococcus* gonidia; apothecia sessile, with a bright-colored or dark margin. *Phyllopsora.* (Pf. I, 1*, 138.)

Family 12. **Cladoniaceae.** Crustaceous to scaly to foliose lichens with *Pleurococcus* gonidia (rarely with Cyanophyceae go-

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nidia); apothecia mostly convex, terminal or lateral on vertical stalks (podetia). *Beomyces, Cladonia, Stereocaulon.* (Pf. I, 1*, 139.)

Family 13. **Gyrophoraceae.** Foliose, coriaceous lichens attached at a single point, with *Pleurococcus* gonidia; apothecia flat, sessile or stalked, margined. *Gyrophora, Umbilicaria.* (Pf. I, 1*, 147.)

Family 14. **Acarosporaceae.** Crustaceous, scaly to foliose lichens with *Pleurococcus* or *Protococcus* gonidia; the thallus poorly developed in most cases; apothecia in thalline warts in which they are sunken. *Thelocarpon, Acarospora, Biatorella.* (Pf. I, 1*, 150.)

Family 15. **Ephebaceae.** Dwarf-fruticose or filiform-branched, crustaceous to scaly lichens with *Scytonema* or *Stigonema* gonidia; apothecia small, sunken or superficial. *Spilonema, Ephebe.* (Pf. I, 1*, 154.)

Family 16. **Pyrenopsidaceae.** Crustaceous, foliose to fruticose lichens, with *Gloeocapsa, Chroococcus,* or *Xanthocapsa* gonidia; apothecia small, closed at first. *Pyrenopsis, Synalissa, Thyrea.* (Pf. I, 1*, 158.)

Family 17. **Lichinaceae.** Crustaceous to scaly or fruticose-branched lichens, with *Rivularia* gonidia; apothecia spheroidal, closed, sunken, with a bright-colored margin. *Pterygium, Lichina.* (Pf. I, 1*, 164.)

Family 18. **Collemataceae.** Gelatinous to crustaceous, scaly, foliose or fruticose lichens, with *Nostoc* gonidia; apothecia closed or open, sunken or sessile, not margined. *Physma, Collema, Leptogium.* (Pf. I, 1*, 168.)

Family 19. **Heppiaceae.** Scaly, foliose, irregular or fruticose lichens with *Scytonema* gonidia; apothecia sunken, not margined. *Heppia.* (Pf. I, 1*, 176.)

Family 20. **Pannariaceae.** Crustaceous-corneous, to scaly and foliose lichens (not gelatinous), with *Nostoc* or *Scytonema* go-

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nidia, rarely with *Pleurococcus* gonidia; apothecia superficial or marginal. *Pannaria, Psoroma, Coccocarpia.* (Pf. I, 1*, 178.)

Family 21. **Stictaceae.** Foliose lichens with *Palmella* or *Nostoc* gonidia; apothecia superficial or marginal, sessile or shield-shaped. *Lobaria, Sticta.* (Pf. I, 1*, 185.)

Family 22. **Peltigeraceae.** Foliose lichens with *Palmella* or *Nostoc* gonidia; apothecia flat, large, submarginal, dark-colored. *Peltigera, Solorina.* (Pf. I, 1*, 190.)

Family 23. **Pertusariaceae.** Crustaceous lichens with *Protococcus* gonidia; apothecia mostly punctiform, single or clustered in thalline warts. *Pertusaria.* (Pf. I, 1*, 195.)

Family 24. **Lecanoraceae.** Crustaceous lichens with *Protococcus* gonidia; apothecia sunken, not margined. *Lecanora* (Pf. I, 1*, 199.)

Family 25. **Parmeliaceae.** Foliose lichens with *Protococcus* gonidia; apothecia scutellaeform, margined, sunken. *Parmelia, Cetraria.* (Pf. I, 1*, 207.)

Family 26. **Usneaceae.** Fruticose lichens, often long and much branched, with *Protococcus* gonidia; apothecia terminal or marginal, scutellaeform, often large. *Usnea, Ramalina, Evernia.* (Pf. I, 1*, 216.)

Family 27. **Caloplacaceae.** Crustaceous lichens with *Pleurococcus* gonidia; apothecia at first sunken, later erumpent, spores colorless. *Caloplaca.* (Pf. I, 1*, 226.)

Family 28. **Theloschistaceae.** Foliose to fruticose lichens with *Pleurococcus* gonidia; apothecia at first sunken, later erumpent, spores colorless. *Theloschistes.* (Pf. I, 1*, 229.)

Family 29. **Buelliaceae.** Crustaceous lichens with *Protococcus* gonidia; apothecia at first sunken, later erumpent, spores brown. *Buellia, Rinodina.* (Pf. I, 1*, 230.)

Family 30. **Physciaceae.** Foliose or fruticose lichens with *Protococcus* gonidia; apothecia at first sunken, later erumpent, spores brown. *Physcia.* (Pf. I, 1*, 234.)

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Order CALICIALES. Powdery Lichens. True fungi, and lichen-forming fungi; apothecia spheroidal, sessile or stalked, the asci and paraphyses breaking up into a pulverulent mass.

Family 31. **Protocaliciaceae.** True fungi; apothecia sessile or stalked; saprophytes. *Mycocalicium.* (Syllabus 46.)

Family 32. **Caliciaceae.** Crustaceous lichens with *Protococcus, Pleurococcus,* or *Trentepohlia* gonidia; apothecia usually long-stalked. *Calicium.* (Pf. I, 1*, 80.)

Family 33. **Cypheliaceae.** Crustaceous lichens with *Pleurococcus, Protococcus,* or *Trentepohlia* gonidia; apothecia sessile. *Cyphelium, Tylophoron.* (Pf. I, 1*, 83.)

Family 34. **Sphaerophoraceae.** Foliose or fruticose lichens with *Protococcus* gonidia; apothecia sessile or nearly so. *Sphaerophorus.* (Pf. I, 1*, 85.)

Order PHACIDIALES. Little Cup Fungi. True fungi, mostly saprophytic, but sometimes parasitic, with a branching septate mycelium, which bears the mostly open spore fruits (apothecia).

Family 35. **Stictidaceae.** Apothecia fleshy, yellow, not black. *Propolis, Stictis.* (Pf. I, 1, 245.)

Family 36. **Tryblidiaceae.** Apothecia leathery or carbonaceous, black, at first sunken in the substratum but later erumpent. *Tryblidium, Scleroderris.* (Pf. I, 1, 253.)

Family 37. **Phacidiaceae.** Apothecia leathery or carbonaceous, black, sunken in the substratum. *Phacidium, Rhytisma.* (Pf. I, 1, 256.)

Order EXOASCALES. Pocket Fungi. True fungi, typically parasitic, much reduced and simplified, the branching mycelium bearing single or clustered asci, not forming genuine apothecia.

Family 38. **Exoascaceae.** Parasitic in the tissues of higher plants, producing crowded asci which break through the epidermis. *Exoascus, Taphrina.* (Pf. I, 1, 158.)

Family 39. **Ascocorticiaceae.** Saprophytic, the asci forming a cushion on the abundant mycelium. *Ascocorticium.* (Pf. I, 1, 161.)

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Family 40. **Endomycetaceae.** Parasitic or saprophytic, the asci single, not clustered in masses or cushions. *Eremascus, Endomyces.* (Pf. I, 1, 154.)

Order PEZIZALES. Cup Fungi. True fungi, saprophytic or parasitic, with a braching filamentous mycelium; apothecia at first usually spherical and closed, later opening, cup-shaped, fleshy, or more or less leathery.

Family 41. **Pyronemataceae.** Apothecia fleshy, open from the first, convex. *Pyronema.* (Pf. I, 1, 178.)

Family 42. **Pezizaceae.** Apothecia fleshy, at first spherical and closed, later open, concave, sessile, or stalked. *Lachnea, Peziza.* (Pf. I, 1, 178.)

Family 43. **Ascobolaceae.** Apothecia fleshy, at first spherical and closed, later open, concave; asci opening by a lid, when ripe escaping from the apothecium. *Ascobolus.* (Pf. I, 1, 188.)

Family 44. **Helotiaceae.** Apothecia fleshy, mostly open from the first, usually stalked; asci not opening by a lid. *Sarcoscypha, Sclerotinia, Dasyscypha, Helotium.* (Pf. I, 1, 193.)

Family 45. **Mollisiaceae.** Apothecia fleshy, open from the first, sessile; asci not opening by a lid. *Mollisia, Pyrenopeziza.* (Pf. I, 1, 210.)

Family 46. **Celidiaceae.** Apothecia leathery, dusky or light-colored, roundish, without a peridium. *Lecidiopsis, Celidium.* (Pf. I, 1, 218.) Some of the species are very closely related to such lichen-forming fungi as *Arthonia.*

Family 47. **Patellariaceae.** Apothecia leathery or corneous, free from the first, usually dark-colored, hemispherical or elongated, cup-shaped or plate-shaped, with a peridium. *Patellaria, Biatorella.* (Pf. I, 1, 221.)

Family 48. **Cenangiaceae.** Apothecia leathery or carbonaceous, at first sunken, usually dark-colored, at first round and closed, later open, cup-shaped, with a peridium. *Cenangium, Dermatea, Bulgaria.* (Pf. I, 1, 231.)

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Family 49. **Cordieritidaceae.** Apothecia on the ends of a branched, carbonaceous, brittle stroma; saprophytes. *Cordierites.* (Pf. I, 1, 241.)

Family 50. **Cyttariaceae.** Apothecia sunken in the surface of a bulbous, stalked, hard stroma, which eventually is gelatinous; parasites. *Cyttaria.* (Pf. I, 1, 241.)

Order HELVELLALES. Helvellas. True fungi, saprophytic, with a branching filamentous mycelium; apothecia open from the first, sessile or more commonly stalked, often convex, fleshy or gelatinous.

Family 51. **Rhizinaceae.** Apothecia fleshy, expanded, sessile. *Rhizina.* (Pf. I, 1, 171.)

Family 52. **Geoglossaceae.** Apothecia fleshy, capitate, stalked; asci opening by a slit. *Mitrula, Geoglossum.* (Pf. I, 1, 163.)

Family 53. **Helvellaceae.** Apothecia fleshy, capitate, stalked; asci opening by a lid. *Morchella, Verpa, Helvella.* (Pf. I, 1, 167.)

Order GRAPHIDALES. Slit Lichens. Lichen-forming fungi, in which the elongated apothecium opens by a narrow slit, which is usually black-margined.

Family 54. **Arthoniaceae.** Crustaceous lichens with *Palmella, Trentepohlia,* or *Phyllactidium* gonidia; apothecia not margined, roundish to oval. *Arthonia, Arthothelium.* (Pf. I, 1*, 89.) Compare Family 46. *Celidiaceae.*

Family 55. **Graphidaceae.** Crustaceous lichens with *Palmella* or *Trentepohlia* gonidia; apothecia single, margined, oval or roundish. *Opegrapha, Graphis, Graphina.* (Pf. I, 1*, 92.)

Family 56. **Chiodectonaceae.** Crustaceous lichens with *Trentepohlia* or *Phycopeltis* gonidia; apothecia round or elongated, sunken in the stroma. *Sarcographa, Chiodecton.* (Pf. I, 1*, 102.)

Family 57. **Dirinaceae.** Crustaceous lichens with *Trentepohlia* gonidia; apothecia round or elongated, superficial. *Dirina.* (Pf. I, 1*, 105.)

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Family 58. **Roccellaceae.** Fruticose, erect lichens with *Trentepohlia* gonidia; apothecia round or elongated, sunken or superficial. *Roccella.* (Pf. I, 1*, 106.)

Order PYRENOLICHENES. Closed Lichens. Lichen-forming fungi allied to the preceding families, mostly crustaceous, less often foliaceous. Perithecia spherical or hemispherical, finally with an apical pore or fissure.

Family 59. **Moriolaceae.** Crustaceous lichens with *Pleurococcus* gonidia, which are enclosed in capsular colonies. *Moriola.* (Pf. I, 1*, 52.)

Family 60. **Epigloeaceae.** Gelatinous lichens with *Palmella* gonidia; perithecia spherical, erect. *Epigloea.* (Pf. I, 1*, 53.)

Family 61. **Verrucariaceae.** Crustaceous lichens with *Pleurococcus* or *Palmella* gonidia; perithecia erect, single. *Verrucaria, Thelidium.* (Pf. I, 1*, 53.)

Family 62. **Dermatocarpaceae.** Foliaceous or somewhat crustaceous lichens, with *Palmella* gonidia; perithecia erect, single, with minute ostiole. *Dermatocarpon, Endocarpon.* (Pf. I, 1*, 58.)

Family 63. **Pyrenothamniaceae.** Fruticose, branching lichens, with *Pleurococcus* gonidia; perithecia erect, single. *Pyrenothamnia.* (Pf. I, 1*, 61.)

Family 64. **Pyrenulaceae.** Crustaceous lichens with *Trentepohlia* gonidia; perithecia erect, single, or clustered. *Microthelia, Arthropyrenia, Porinia, Pyrenula.* (Pf. I, 1*, 62.)

Family 65. **Phyllopyreniaceae.** Foliaceous lichens with *Trentepohlia* gonidia; perithecia single, sunken. *Lepolichen.* (Pf. I, 1*, 68.)

Family 66. **Trypetheliaceae.** Crustaceous lichens with *Trentepohlia* gonidia; perithecia clustered, erect, sunken. *Trypethelium.* (Pf. I, 1*, 69.)

Family 67. **Paratheliaceae.** Crustaceous lichens with *Trentepohlia* gonidia; perithecia single, with narrow, tubular ostiole. *Parathelium.* (Pf. I, 1*, 71.)

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Family 68. **Astrotheliaceae.** Crustaceous lichens with *Trentepohlia* gonidia; perithecia clustered more or less radially. *Astrothelium, Parmentaria.* (Pf. I, 1*, 72.)

Family 69. **Strigulaceae.** Crustaceous lichens with *Cephaleuros* or *Phyllactidium* gonidia; perithecia single, erect. *Phylloporinia, Strigula.* (Pf. I, 1*, 74.)

Family 70. **Pyrenidiaceae.** Crustaceous to scaly, and foliaceous lichens with *Nostoc, Scytonema,* or *Sirosiphon* gonidia; perithecia single, erect. *Pyrenidium.* (Pf. I, 1*, 76.)

Family 71. **Mycoporaceae.** Crustaceous lichens with *Palmella* or *Trentepohlia* gonidia; perithecia flattened, more or less subdivided. *Mycoporum.* (Pf. I, 1*, 77.)

Order PYRENOMYCETALES. Closed Fungi; "Black Fungi." Plants filamentous, often compacted into a hard cellular mass, the stroma, in the surface of which the spheroidal, simple or mostly compound perithecia are partially embedded.

Family 72. **Hypocreaceae.** Simple or compound; perithecia mostly reddish or yellowish, subcarnose or waxy-membranaceous. *Nectria, Epichloe, Cordyceps, Claviceps.* (Pf. I, 1, 342.)

Family 73. **Dothideaceae.** Compound; perithecia black, coriaceous or carbonaceous, confluent with the stroma. *Plowrightia, Dothidea, Phyllachora.* (Pf. I, 1, 373).

Family 74. **Sordariaceae.** Simple; perithecia soft, brown or black, with or without a stroma; mostly coprophilous. *Sordaria, Sporormia.* (Pf. I, 1, 390.)

Family 75. **Chaetomiaceae.** Simple; perithecia superficial, free, brown, and fragile, generally bristly, on a superficial mycelium. *Chaetomium.* (Pf. I, 1, 387.)

Family 76. **Sphaeriaceae.** Simple; perithecia superficial, free, or more or less sunken in the stroma, globular or flattish. *Trichosphaeria, Lasiosphaeria, Rosellinia.* (Pf. I, 1, 394.)

Family 77. **Ceratostomataceae.** Simple; the perithecia more or less prolonged into a tubular ostiole. *Ceratostomella, Ceratostoma.* (Pf. I, 1, 405.)

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Family 78. **Cucurbitariaceae.** Perithecia clustered, sometimes united into a compound ascigerous mass, hard, woody or leathery, black or brown. *Nitschkia, Cucurbitaria.* (Pf. I, 1, 408.)

Family 79. **Amphisphaeriaceae.** Perithecia either closely adnate, or somewhat sunken into the matrix, generally hard and carbonaceous; ostiole papilliform. *Amphisphaeria, Strickeria.* (Pf. I, 1, 413.)

Family 80. **Lophiostomataceae.** Perithecia scattered, generally more or less buried in the matrix, carbonaceous or subcoriaceous; ostiole an elongated slit. *Lophiostoma.* (Pf. I, 1, 417.)

Family 81. **Mycosphaerellaceae.** Perithecia at first subepidermal, spherical, minute. *Guignardia, Mycosphaerella.* (Pf. I, 1, 421.)

Family 82. **Pleosporaceae.** Perithecia buried in the matrix with only the papilliform ostiole projecting, membranaceous. *Physalospora, Venturia, Didymella, Didymosphaeria, Metasphaeria, Pleospora.* (Pf. I, 1, 428.)

Family 83. **Massariaceae.** Perithecia for the most part permanently covered by the epidermis with only the papilliform ostiole projecting, coriaceous. *Massaria.* (Pf. I, 1, 444.)

Family 84. **Gnomoniaceae.** Perithecia at first subepidermal, later erumpent, with an elongated tubular ostiole, membranaceous. *Hendersonia, Gnomonia.* (Pf. I, 1, 447.)

Family 85. **Valsaceae.** Perithecia permanently enclosed in a stroma (compound), black. *Anthostoma, Valsa, Diaporthe.* (Pf. I, 1, 454.)

Family 86. **Melanconidaceae.** Perithecia buried more or less deeply in the cushion-like stroma; saprophytes. *Melanconis.* (Pf. I, 1, 468.)

Family 87. **Diatrypaceae.** Perithecia immersed in the stroma in one or more series, elongated into neck-like projections; saprophytes. *Calosphaeria, Diatrype.* (Pf. I, 1, 472.)

Family 88. **Melogrammataceae.** Perithecia immersed in the stroma (hemispherical) forming under the periderm, then break-

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ing through, pointed or elongated into neck-like projections; saprophytes. *Botryosphaeria, Melogramma.* (Pf. I, 1, 477.)

Family 89. **Xylariaceae.** Perithecia peripheral in the massive stroma, which is often hemispherical or clavate, black, or brown, woody or carbonaceous. *Hypoxylon, Xylaria, Nummularia, Ustulina.* (Pf. I, 1, 480.)

Order HYSTERIALES. Slit-Fungi. True fungi, saprophytic or parasitic, with a branching mycelium, often forming a stroma; apothecia sessile, or at first sunken and later erumpent, usually elongated, dark-colored, leathery or carbonaceous, with a narrow slit.

Family 90. **Hypodermataceae.** Apothecia sunken, leathery, round or elongated, black; saprophytes. *Hypoderma, Lophiodermium.* (Pf. I, 1, 267.)

Family 91. **Dichaenaceae.** Apothecia at first sunken, later erumpent, leathery, black, elongated, or round; bark-saprophytes. *Dichaena.* (Pf. I, 1, 270.)

Family 92. **Ostropaceae.** Apothecia at first deeply sunken, later somewhat erumpent, leathery, black, roundish; saprophytes. *Ostropa.* (Pf. I, 1, 271.)

Family 93. **Hysteriaceae.** Apothecia sessile, narrowly elongated to broad, and even lobed, black, carbonaceous or leathery; saprophytes. *Hysterium, Hysterographium.* (Pf. I, 1, 272.)

Family 94. **Acrospermaceae.** Apothecia sessile, erect clavate, corneous, brown, spores very long, filamentous; saprophytes. *Acrospermum.* (Pf. I, 1, 277.)

Order PERISPORIALES. Mildews. Plants filamentous, producing minute, simple, mostly spherical spore-fruits, consisting of one to many asci enclosed in a hard, cellular shell (perithecium).

Family 95. **Erysiphaceae.** Superficial parasites upon higher plants, the filaments white with abundant, simple, vertical conidiophores, the blackish, spherical spore-fruits with radiating, usually forked appendages. *Erysiphe, Sphaerotheca, Microsphaera, Podosphaera, Uncinula.* (Pf. I, 1, 328.)

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Family 96. **Perisporiaceae.** Mostly saprophytes with the yellow or black fruits usually without appendages. *Parodiella, Perisporium.* (Pf. I, 1, 333.)

Family 97. **Microthyriaceae.** Minute superficial parasites upon higher plants, the filaments dark-colored; spore fruits flattish, unappendaged, contaning 8-spored asci. *Microthyrium, Asterina.* (Pf. I, 1, 338.)

Order ASPERGILLALES. Little Truffles. True fungi, saprophytic, with an abundant branching mycelium which grows superficially, or penetrates the substratum, and eventually bears the small, mostly spherical, fleshy spore-fruits.

Family 98. **Gymnoascaceae.** Spore-fruits usually mere loose masses of hyphae with asci in the center. *Gymnoascus, Myxotrichium.* (Pf. I, 1, 293.)

Family 99. **Aspergillaceae.** Spore-fruits spheroidal, parenchymatous, with a definite peridium, sessile, not subterranean. opening irregularly. *Aspergillus, Penicillium, Meliola.* (Pf. I, 1, 297.)

Family 100. **Onygenaceae.** Spore-fruits spheroidal, parenchymatous, with a definite peridium, stalked, not subterranean. *Onygena.* (Pf. I, 1, 309.)

Family 101. **Trichocomataceae.** Spore-fruits cylindrical, erect, with a peridium, sessile, not subterranean. *Trichocoma.* (Pf. I, 1, 310.)

Family 102. **Elaphomycetaceae.** Spore-fruits subterranean, opening irregularly, pulverulent when ripe. *Elaphomyces.* (Pf. I, 1, 311.)

Family 103. **Terfeziaceae.** Spore-fruits subterranean, opening irregularly, not pulverulent when ripe. *Terfezia, Choiromyces.* (Pf. I, 1, 312.)

Order HEMIASCALES. True fungi, mostly saprophytic, much reduced and simplified, the branched mycelium bearing the single few- to many-spored asci.

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Family 104. **Ascoideaceae.** Asci much elongated, not corticated. *Ascoidea.* (Pf. I, 1, 145.)

Family 105. **Protomycetaceae.** Asci ellipsoid or spherical, not corticated. *Protomyces* (parasitic), *Endogone.* (Pf. I, 1, 147.)

Family 106. **Monascaceae.** Asci spherical, terminal, corticated. *Monascus.* (Pf. I, 1, 148.)

Family 107. **Saccharomycetacae.** "Yeasts." Asci early isolated from the few-celled mycelium, which itself early breaks up into short segments; saprophytic. *Saccharomyces.* (Pf. I, 1, 153.)

Order TUBERALES. Truffles. True fungi, saprophytic, with a branching filamentous, generally subterranean mycelium; spore-fruits tuberous, subterranean, fleshy, containing asci in definite cavities or layers.

Family 108. **Tuberaceae.** Spore-fruits with spore-bearing cavities open to the exterior by rifts or slits in the tissue and rind. *Tuber, Genea.* (Pf. I, 1, 281.)

Family 109. **Balsamiaceae.** Spore-fruits with spore-bearing cavities not open to the exterior. *Balsamia.* (Pf. I, 1, 288.)

Class 16. BASIDIOSPOREAE. Basidium Fungi. True fungi, mostly saprophytes, consisting of septated mycelium which bears the spore-fruits; spores ("basidiospores") borne externally upon special cells ("basidia"), which are usually massed in a hymenium. The basidia are here regarded as the homologues of the asci of the *Ascosporeae.* (About 14,000 species.)

Order HYMENOGASTRALES. False Tubers. Spore-fruit indehiscent, subterranean; gleba fleshy or gelatinous, putrescent, wholly, or at first filled with irregular cavities; no capillitium.

Family 110. **Hymenogastraceae.** With the characters of the order. *Hysterangium, Hymenogaster, Octaviana, Rhizopogon.* (Pf. I, 1**, 296.)

Order SCLERODEMATALES. Hard Puff-balls. Spore-fruit epigeous, roundish, often stalked, containing groups of clustered basidia, bearing terminal spores; no capillitium; with or without columella.

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Family 111. **Sclerodermataceae.** Spore-fruit often with a stalk-like base; no columella; gleba powdery, often with sporangioles. *Scleroderma, Pisolithus.* (Pf. I, 1**, 329.)

Family 112. **Podaxaceae.** With columella; gleba more or less lamellate. *Secotium, Podaxon.* (Pf. I, 1**, 329.)

Order LYCOPERDALES. Puff-balls. Spore-fruit fleshy when young, closed, subterranean at first, later superficial, internally filled with irregular spore-bearing canals, or a spore-bearing tissue; capillitium present.

Family 113. **Lycoperdaceae.** Spore-fruit sessile or short-stalked, filled with spore-bearing canals. *Lycoperdon, Calvatia, Bovista, Geaster.* (Pf. I, 1**, 315.)

Family 114. **Tylostomataceae.** Spore-fruit long-stalked, when young filled with spore-bearing tissue. *Tylostoma, Battarea.* (Pf. I, 1**, 342.)

Order NIDULARIALES. Bird-nest Fungi. Spore-fruit spherical, top-shaped, or cylindrical, leathery, containing one or more spore-bearing cavities, which by deliquescence of the surrounding tissues become peridioles ("sporangioles").

Family 115. **Nidulariaceae.** Spore-fruits small, each with several peridioles, sessile upon the ground. *Nidularia, Crucibulum, Cyathus.* (Pf. I, 1**, 326.)

Family 116. **Sphaerobolaceae.** Spore-fruits spherical, each with one spherical peridiole which is ejected at maturity. *Sphaerobolus.* (Pf. I, 1**, 346.)

Order PHALLALES. Stink-Horns. Spore-fruit fleshy, when young closed, subterranean at first, internally containing a circular spore-bearing cavity, later developing a stalk which ruptures the peridium, exposing the spores; no capillitium.

Family 117. **Phallaceae.** Spore-bearing stalk cylindraceous, hollow, capped by the spore mass. *Mutinus, Ithyphallus, Dictyophora.* (Pf. I, 1**, 289.)

Family 118. **Clathraceae.** Spore-bearing stalk ovoid and reticulated, or cylindrical and branched above; spore mass capitate or

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between the branches. *Clathrus, Simblum, Aseroe.* (Pf. I, 1**, 280.)

Order AGARICALES. Toadstool Fungi. Spore-fruit when mature from umbrella-shaped to bracket-shaped, branched, fruticose, foliose, and vaguely expanded, developing a hymenium on surfaces which are eventually external.

Family 119. **Agaricaceae.** Agarics. Spore-fruits usually fleshy, typically umbrella-shaped, with hymenium on lamellae on the under side of the cap. *Coprinus, Russula, Psalliota, Agaricus, Amanita.* (Pf. I, 1**, 198.)

Family 120. **Polyporaceae.** Polypores. Spore-fruit fleshy, leathery or woody, from umbrella-shaped to bracket-shaped, and resupinate and expanded; the hymenium lining pits or pores. *Fomes, Polyporus, Polystictus, Boletus.* (Pf. I, 1**, 152.)

Family 121. **Hydnaceae.** Prickly Fungi. Spore-fruit fleshy or leathery, from umbrella-shaped to bracket-shaped, fruticose or resupinate-expanded, the hymenium covering the surface of warts or prickles. *Hydnum, Irpex.* (Pf. I, 1**, 139.)

Family 122. **Clavariaceae.** Coral Fungi. Spore-fruits fleshy to leathery, cylindrical to clavate and fruticose, the hymenium covering the outer surface. *Pistillaria, Clavaria.* (Pf. I, 1**, 130.)

Family 123. **Thelephoraceae.** Leathery Fungi. Spore-fruits cuticular or leathery, flat, shell-shaped, capitate or branched, the hymenium smooth and covering the surface. *Corticium, Stereum, Thelephora.* (Pf. I, 1**, 117.)

Order EXOBASIDIALES. Reduced and degraded *Basidiosporeae,* related to the preceding families; basidia undivided, more or less rounded.

Family 124. **Dacryomycetaceae.** Saprophytes; basidia long-clavate, branched in or on gelatinous explanate, cup-shaped fruticose or capitate spore-fruits. *Dacryomyces, Guepinia, Calocera.* (Pf. I, 1**, 96.)

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Family 125. **Tulasnellaceae.** Saprophytes; basidia rounded, without sterigmata. *Tulasnella.* (Syllabus 40.)

Family 126. **Hypochnaceae.** Basidia developed upon the flocculent mycelium, forming vague superficial spore-fruits. *Hypochnus, Tomentella.* (Pf. I, 1**, 114.)

Family 127. **Exobasidiaceae.** Parasites in the tissues of higher plants, the basidia crowded into a loose hymenium; spores borne on sterigmata. *Exobasidium.* (Pf. I, 1**, 103.)

Order TREMELLALES. Jelly Fungi. Reduced and degraded *Basidiosporeae,* related to the preceding families: basidia divided by vertical partitions.

Family 128. **Sirobasidiaceae.** Spore-fruits gelatinous, open, the basidia in serial rows, spores sessile. *Sirobasidium.* (Pf. I, 1**, 89.)

Family 129. **Tremellaceae.** Spore-fruits gelatinous, open, expanded to foliose and cup-shaped; basidia collateral, elongated. *Exidia, Tremella.* (Pf. I, 1**, 90.)

Family 130. **Hyaloriaceae.** Spore-fruits capitate, stalked, closed, the basidia developed in a circular subterminal zone. *Hyaloria.* (Pf. I, 1**, 95.)

Order AURICULARIALES. Ear Fungi. Reduced and degraded *Basidiosporeae,* related to the preceding families; basidia divided by transverse partitions.

Family 131. **Auriculariaceae.** Hymenium exposed; spore-fruits from irregular foliose to loose and vague aggregations of basidia; more or less gelatinous. *Platygloea, Auricularia.* (Pf. I, 1**, 83.)

Family 132. **Pilacraceae.** Spore-fruits capitate, stalked, closed, filled with basidia. *Pilacre, Pilacrella.* (Pf. I, 1**, 86.)

Class 17. TELIOSPOREAE. Brand Fungi. Parasitic fungi, much reduced and degraded, with a mycelium which penetrates the tissues of the host and produces erumpent spore-clusters (sori) but no definite spore-fruits; conidia single-celled, usually

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of one or two kinds; asci and basidia here replaced by one-, two-, or several-celled teliospores. (About 4,200 species.)

Order UREDINALES. Rusts. Typically producing five kinds of spores, viz., (1) thin-walled sporidia, (2) smooth-walled pycniospores, (3) aeciospores, (4) uredospores, (5) teliospores, of which 3 and 4 are forms of conidia.

Family 133. **Aecidiaceae.** Teliospores free or fascicled, usually erumpent; sporidia, pycniospores, aeciospores, uredospores, and teliospores typically present; walls of spores usually firm. *Uropyxis, Phragmidium, Aecidium, Nigredo, Uromyces, Dicaeoma* (*"Puccinia"*). (Pf. I, 1**, 48.)

Family 134. **Uredinaceae.** Teliospores compacted into a crust or column, subcuticular or erumpent, walls of spores firm. *Uredo* (*"Melampsora"*), *Cronartium.* (Pf. I, 1**, 38.)

Family 135. **Coleosporiaceae.** Teliospores compacted laterally into waxy layers; walls of spores weakly gelatinous. *Coleosporium.* (Pf. I, 1**, 42.)

Order USTILAGINALES. Smuts. Typically producing two kinds of spores, viz., (1) thin-walled sporidia, (2) teliospores, which are here regarded as homologous with the teliospores of the preceding order.

Family 136. **Ustilaginaceae.** Germinating teliospore producing a septated promycelium. *Ustilago, Sphacelotheca.* (Pf. I, 1**, 6.)

Family 137. **Tilletiaceae.** Germinating teliospore producing a tubular promycelium. *Tilletia, Entyloma.* (Pf. I, 1**, 15.)

FUNGI IMPERFECTI. The Imperfect Fungi. Here are collected from 16,000 to 17,000 species of fungi with regard to which our knowledge is quite imperfect. We do not know their ascigerous states, if indeed they have any, but it is generally assumed that they are the conidial states of *Ascosporeae,* and that possibly in some cases they have lost all else through excessive degeneration. They are mostly parasitic. For the present they must be grouped here, and treated as though they were

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autonomous, although the classification here given is merely provisional.

Order SPHAEROPSIDALES. Spot Fungi. Conidia developed in pycnidia, i. e. perithecium-like "fruits."

Family 138. **Sphaerioidaceae.** Pycnidia more or less spherical, cuticular, leathery or carbonaceous, black. *Phyllosticta, Phoma, Sphaeropsis, Ascochyta, Darluca, Diplodia, Septoria.* (Pf. I, 1**, 349.)

Family 139. **Nectrioidaceae.** Pycnidia more or less spherical, fleshy or waxy, bright colored; spores hyaline. *Zythia, Sphaeronemella, Aschersonia.* (Pf. I, 1**, 382.)

Family 140. **Leptostromataceae.** Pycnidia shield-shaped, cuticular or carbonaceous, black. *Leptothyrium, Leptostroma, Leptostromella.* (Pf. I, 1**, 386.)

Family 141. **Excipulaceae.** Pycnidia more or less dish- or top-shaped, round or elongated, cuticular or carbonaceous, black. *Excipula, Amerosporium, Discella.* (Pf. I, 1**, 392.)

Order MELANCONIALES. Black-dot Fungi. Conidia developed upon a stroma which eventually breaks through the epidermis.

Family 142. **Melanconiaceae.** Stroma sometimes feebly developed but more often firm and black. *Gloeosporium, Colletotrichum, Melanconium, Coryneum, Pestalozzia, Cylindrosporium.* (Pf. I, 1**, 398.)

Order MONILIALES. Molds. Conidia developed upon separate conidiophores which do not form a stroma, but penetrate the epidermis or the stromata singly or in clusters.

Family 143. **Mucedinaceae.** Conidiophores hyaline, always separate. *Oospora, Monilia, Oidium, Sterigmatocystis, Ovularia, Sporotrichium, Botrytis, Verticillium, Ramularia.* (Pf. I, 1**, 416.)

Family 144. **Dematiaceae.** Conidiophores dark or black, always separate. *Torula, Trichosporium, Dematium, Fusicladium, Cladosporium, Helminthosporium, Macrosporium, Cercospora.* (Pf. I, 1**, 454.)

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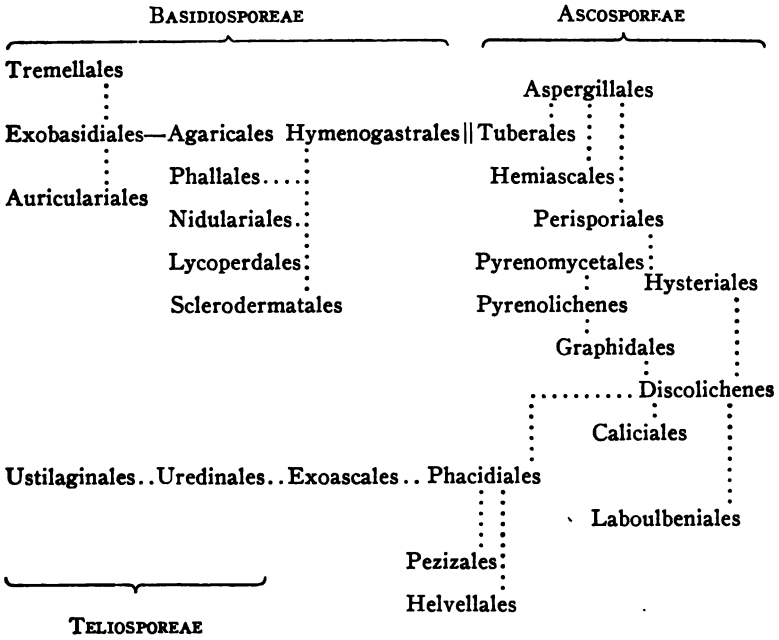
Family 145. **Stilbaceae.** Conidiophores united into an erect, compound, spore-bearing body. *Isaria, Graphium, Stysanus.* (Pf. I, 1**, 488.)

Family 146. **Tuberculariaceae.** Conidiophores united into a cushion-like spore-bearing body. *Tubercularia, Fusarium, Epicoccum.* (Pf. I, 1**, 498.)

PHYLOGENETIC CHART

Showing the sequence and general relationship of the orders of Ascosporeae, Basidiosporeae, and Teliosporeae, as given on the preceding pages.



Phylum XII. **CYCADOPHYTA.** The Cycads.

Chlorophyll-green terrestrial plants in which the alternation of generations is obscured by the reduction of the gametophyte to a condition of dependence upon the long-lived, leafy-stemmed sporophyte. Spores of two kinds (heterosporous), borne on

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sporophylls which occur in strobili, the microspores set free in germination producing tubular antherids; the megaspores retained in their sporangia, where they develop gametophytes and archegones; after fecundation of the egg by the motile sperms, the embryo sporophyte surrounded by the gametophyte tissue embedded in the 1- or 2-coated sporangium constitutes the "seed." (Living species about 140, but very many extinct.)

Class 27. PTERIDOSPERMEAE (*Cycadofilices*). Seed Ferns. Palaeozoic plants, long extinct, related to the ferns on the one hand, and the following classes on the other. Stems short and erect, increasing in thickness, bearing pinnate leaves.

Order PTERIDOSPERMALES. With the characters of the class.

Family 1. **Lyginopterideae.** With stems which seem to have had the power of increasing in diameter by the growth of their collateral bundles. *Lyginopteris, Megaloxylon, Calamopitys.* (Pf. I, 4, 783.)

Family 2. **Medulloseae,** related to the preceding. *Medullosa, Steloxylon.* (Pf. I, 4, 788.)

Family 3. **Cladoxyleae,** including *Cladoxylon* and *Voelkelia.* (Pf. I, 4, 782.)

Family 4. **Protopityeae,** including *Protopitys.* (Pf. I, 4, 794.)

Family 5. **Araucarioxyleae,** including *Araucarioxylon.* (Pf. I, 4, 795.)

Class 28. CYCADINEAE. Common Cycads. Plants with erect, woody, little-branched stems, bearing terminal clusters of pinnate leaves. The collateral fibrovascular bundles are arranged concentrically in the stem; these increase the thickness of the stem by development of their cambium, and also by the formation of new bundles in the cortical meristem. Sporophylls in dioecious strobili. Many cyads which existed in Mesozoic times have become extinct, leaving only a few genera and species in the present.

Order CYCADALES. With the characters of the class.

Family 6. **Cycadaceae.** Tropical trees of the present time pro-

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ducing staminate cones, and loose clusters of megasporophylls. *Cycas.* (Pf. II, 1, 6.)

Family 7. **Zamiaceae.** Tropical trees of the present time, with both staminate and seed cones. *Dioon, Encephalartos, Macrozamia, Zamia, Ceratozamia.* (Pf. II, 1, 6.)

Class 29. BENNETTITINEAE. "Flowering-plant Ancestors." Mesozoic plants, long extinct, related on the one hand to the ancient cycads, and on the other to the flowering plants, of which they are thought by some, with very good reasons, to have been the ancestors. Stems simple, erect, increasing in thickness by annular growth of fibrovascular tissue; leaves pinnate; sporophylls in terminal amphisporangiate strobili.

Order BENNETTITALES. With the characters of the class.

Family 8. **Bennettitaceae.** Short-stemmed plants with the main axis terminated by a strobilus of sporophylls, the lower sterile and long, the next bearing many microsporangia, and the uppermost megasporangia. *Bennettites.* (Wieland, American Fossil Cycads; Engler's Syllabus, 103.)

Class 30. CORDAITINEAE. Conifer Ancestors. Palaeozoic plants, mostly long extinct, related to the modern cycads, and probably also to the conifers, of which indeed they may have been the ancestors.

Order CORDAITALES. Branching trees, bearing large, elongated, parallel-veined leaves; seeds with two integuments. (Extinct.)

Family 9. **Cordaitaceae.** Tall trees (20–30 m. high) bearing subterminal clusters of thick, spirally-arranged, leathery leaves, sometimes as much as 1 m. long, and 2 dm. wide. *Cordaites, Dadoxylon, Artisia.* (Pf. II, 1, 26.)

Order GINKGOALES. Maidenhair Trees. Woody, freely-branched trees, bearing fan-shaped, parallel-veined leaves; the collateral fibrovascular bundles are arranged concentrically in the stem, and these increase its thickness by the development of their cambium; sporophylls in dioecious strobili.

Family 10. **Ginkgoaceae.** Represented today by a single spe-

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cies of *Ginkgo,* a large Chinese and Japanese tree, but in the Tertiary there were many species of this genus, and of other now wholly extinct genera. (Pf. II, 1, 108.)

Order GNETALES. The Joint-Firs. Chlorophyll-green terrestrial plants, shrubby in size and structure, with a branched or simple stem, undivided leaves, monoecious sporophylls, non-motile sperms and naked seeds. They are related to the Cycads, and possibly should be included in this phylum. There are three genera of doubtful mutual relationship. They are usually referred to a common family, *Gnetaceae,* with no good reason. They probably represent the remnants of as many divergent families.

Family 11. **Ephedraceae.** Small, Equisetum-like evergreen shrubs with reduced, opposite leaves. *Ephedra.* (Species 35.) (Pf. II, 1, 117.)

Family 12. **Gnetaceae.** Shrubs and trees with large, opposite, evergreen, pinnately-veined leaves. *Gnetum.* (Species 15.) (Pf. II, 1, 120.)

Family 13. **Tumboaceae.** Short, thick-stemmed woody plants with two large, opposite, parallel-veined leaves. *Tumboa* (*Welwitschia*). (Species 1.) (Pf. II, 1, 123.)

Phylum XIV. **ANTHOPHYTA.** The Flowering Plants.

Typically chlorophyll-green plants (a few colorless hysterophytes), ranging from small or even minute plants to great trees a hundred or more meters in height; alternation of generations obscured by the extreme reduction of the gametophyte to a condition of dependence upon the long-lived, leafy-stemmed sporophyte. Spores of two kinds (heterosporous), produced on sporophylls which are borne in modified, often much reduced strobili (flowers); microsporophylls (stamens) normally with two sporangia (pollen sacs); the microspores being set free (as "pollen") when mature; megasporophylls (carpels) folded lengthwise (constituting the "pistil"), enclosing the sporangia (ovules) in which the megaspores remain and develop the minute gametophyte; archegones very much reduced, including little more than the egg,

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which is fecundated by the non-ciliated sperms (male nuclei) from the tubular antherids resulting in the formation of an embryo sporophyte; megasporangia surrounded by one or two enveloping coats (seed coats); mature seed with or without endosperm (gametophyte tissue).

The Flowering Plants are here held to have sprung from strobiliferous ancestors probably of the type of the *Bennettitaceae,* and as a consequence those Anthophyta are considered to be primitive in which the sporophylls are many and distinct. Symphylly and syncarpy are later structural conditions than apophylly and apocarpy. So also, fewer sporophylls in the anthostrobilus is a later condition derived from the earlier polyphyllous structure. The symphysis of sporophylls is a mode of evolution, and so is their aphanisis.

The plants constituting this phylum are those commonly termed Angiosperms, in contrast with the Gymnosperms, including the Cycads (CYCADOPHYTA) and Conifers (STROBILOPHYTA). It appears to the writer, however, that these are more properly three pretty distinct phyla, and that the relationship of the Gymnosperms to the Angiosperms is so remote that the treatment here given them is more nearly in accordance with what is known as to their phylogeny.

There are two classes, Monocotyledons and Dicotyledons, of which the second was probably the earlier, as it is now much the larger numerically. Indeed it is becoming more probable that the Monocotyledons are to be regarded as a peculiar side branch which sprang from the primitive Dicotyledons after the latter had become well established. Yet the Monocotyledons have not developed to as high a rank in any of their orders as have some of the Dicotyledons.

Class 32. MONOCOTYLEDONEAE. The Monocotyledons. Leaves of young sporophore alternate; leaves of mature sporophore usually parallel-veined; fibro-vascular bundles of the stem scattered, usually not arranged in rings. (Species about 23,700.)

Sub-Class MONOCOTYLEDONEAE–HYPOGYNAE. Per-

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ianth and stamens arising below the carpels; (carpels superior). Flowers mostly actinomorphic.

Order ALISMATALES. Pistils separate, superior to all other parts of the flower.

Family 1. **Alismataceae.** Water Plantains. Aquatic or paludose herbs with mostly radical, often large leaves; flowers small to large; perianth in two whorls of three leaves each (calyx and corolla). *Alisma, Sagittaria.* (Pf. II, 1, 227.)

Family 2. **Butomaceae.** Aquatic or paludose herbs, bearing narrow or broad leaves, with convergent veins; perianth in two whorls, of three leaves each (calyx and corolla). *Butomus, Limnocharis.* (Pf. II, 1, 232.)

Family 3. **Truridaceae.** Very small, pale, leafless plants growing in wet places in tropical countries. *Triuris.* (Pf. II, 1, 235.)

Family 4. **Scheuchzeriaceae.** Aquatic or paludose herbs with rush-like leaves, and small flowers, with a two-whorled perianth, each 4- to 6-parted. *Triglochin, Scheuchzeria.* (Pf. II, 1, 222.)

Family 5. **Typhaceae.** Cat-tails. Aquatic or paludose herbs, with linear, sheathing leaves; pistil 1-celled; ovule 1. *Typha.* (Pf. II, 1, 183.)

Family 6. **Sparganiaceae.** Aquatic or paludose plants with creeping rootstocks and erect stems, bearing linear leaves; flowers monoecious in dense globose heads. *Sparganium.* (Pf. II, 1, 192.)

Family 7. **Pandanaceae.** Screw-pines. Shrubs or trees with spirally crowded, narrow, stiff leaves on the ends of the branches; pistil 1-celled; ovules one or many. *Pandanus.* (Pf. II, 1, 186.)

Family 8. **Aponogetonaceae.** Aquatic plants with petioled, oblong, translucent leaves, with convergent veins; flowers small, spicate. *Aponogeton.* (Pf. II, 1, 218.)

Family 9. **Potamogetonaceae.** River-weeds. Aquatic or paludose herbs with mostly alternate stem-leaves; flowers mostly small and inconspicuous; perianth none, or of 1 to 6 leaves in 1

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or 2 whorls. *Potamogeton, Zostera, Zannichellia.* (Pf. II, 1, 194.)

Order LILIALES. Pistils united (usually 3), forming a compound pistil, superior; flower leaves (usually 6, in two similar whorls) delicate and corolla-like.

Family 10. **Liliaceae.** The Lilies. Pistil mostly 3-celled; stamens 6; perianth of two similar whorls, each of three similar leaves. *Lilium, Erythronium, Tulipa, Yucca, Asparagus, Allium.* (Pf. II, 5, 10.)

Family 11. **Stemonaceae.** Pistil 1-celled; stamens 4; perianth of two similar whorls, each of two similar leaves. *Stemona, Croomia.* (Pf. II, 5, 8.)

Family 12. **Pontederiaceae.** Aquatic herbs with 3- or 1-celled pistil; stamens 6 or 3; perianth of two similar whorls, each of three similar or dissimilar leaves. *Pontederia, Heteranthera.* (Pf. II, 4, 70.)

Family 13. **Cyanastraceae.** Tropical African rhizomatous plants. *Cyanastrum.* (Syllabus, 96.)

Family 14. **Philydraceae.** Pistil 3-celled; stamen 1; perianth of two similar whorls, each of two dissimilar leaves. *Philydrium.* (Pf. II, 4, 75.)

Family 15. **Commelinaceae.** Spiderworts. Succulent herbs with 3- or 2-celled pistil; stamens 6; perianth of two dissimilar whorls of three similar leaves. *Commelina, Tradescantia.* (Pf. II, 4, 60.)

Family 16. **Xyridaceae.** Rush-like plants with a 1-celled or incompletely 3-celled pistil; stamens 3; perianth of two dissimilar whorls, each of three similar leaves. *Xyris.* (Pf. II, 4, 14.)

Family 17. **Mayaceae,** Slender, creeping, moss-like plants with 1-celled pistil; stamens 3; perianth of two dissimilar whorls, each of three similar leaves. *Mayaca.* (Pf. II, 4, 16.)

Family 18. **Juncaceae.** Rushes. Herbs with narrow leaves; pistil 1- to 3-celled; ovules solitary or many; fruit a dry 3-valved pod. *Juncus, Luzula.* (Pf. II, 5, 1.)

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Family 19. **Eriocaulonaceae.** Rush-like herbs with flowers in close heads; perianth segments 6 or less, small; pistil 3- or 2-celled; ovules orthotropous, pendulous. *Eriocaulon.* (Pf. II, 4, 21.)

Family 20. **Thurniaceae.** South American herbs, with small, 1-nerved leaves, and small axillary flowers. *Thurnia.* (Syllabus, 94.)

Family 21. **Rapateaceae.** Tall, sedge-like marsh herbs with 3-celled pistil; stamens 6, in pairs; perianth of two dissimilar whorls, each of three similar leaves. *Rapatea.* (Pf. II, 4, 28.)

Family 22. **Naiadaceae.** Slender, branching, wholly submerged aquatics, with sheathing, mostly opposite leaves, and monoecious or dioecious flowers. *Naias.* (Pf. II, 1, 214.)

Order ARALES. Compound pistil, mostly tricarpellary, superior; ovules more than one; flower-leaves reduced to scales or entirely wanting.

Family 23. **Cyclanthaceae.** Mostly herbaceous plants with broad, petioled leaves having parallel venation; pistil 1-celled; ovules many, on four parietal placentae. *Cyclanthus.* (Pf. II, 3, 93.)

Family 24. **Araceae.** Arums. Mostly herbaceous plants with broad, petioled leaves, having reticulate venation; pistil 1- to 4-celled; ovules 1 or more. *Anthurium, Acorus, Monstera, Symplocarpus, Calla, Philodendron, Calocasia, Caladium, Arum, Arisaema.* (Pf. II, 3, 102.)

Family 25. **Lemnaceae.** Duckweeds. Very small, floating, aquatic herbs; pistil 1-celled; ovules 1 or more. *Lemna, Spirodela.* (Pf. II, 3, 154.)

Order PALMALES. Compound pistil mostly tricarpellary, superior; ovules usually one; flower-leaves reduced to rigid or herbaceous scales. (Sp. 1085.)

Family 26. **Palmaceae.** Palms. Trees or shrubs with compound leaves; pistil 1- to 3-celled; fruit a 1-seeded berry or drupe

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(rarely 2- to 3-seeded). *Phoenix, Chamaerops, Calamus, Oreodoxa, Cocos.* (Pf. II, 3, 1.)

Order GRAMINALES. Compound pistil reduced to 2 or 3 carpels; ovule solitary; perianth reduced to small scales or entirely wanting.

Family 27. **Restionaceae.** Rush-like herbs or undershrubs, with spiked, racemed, or panicled flowers; perianth segments 6 or less, chaffy; pistil 1- to 3-celled; ovules orthotropous, pendulous. *Restio.* (Pf. II, 4, 3.)

Family 28. **Centrolepidiaceae.** Small rush-like herbs with flowers in spikes or heads; perianth none; pistil 1- to 3-celled; ovules orthotropous, pendulous. *Centrolepis.* (Pf. II, 4, 11.)

Family 29. **Flagellariaceae.** Erect or climbing herbs with long narrow leaves; pistil 3-celled; ovules solitary; fruit a 1- to 2-seeded berry. *Flagellaria.* (Pf. II, 4, 1.)

Family 30. **Cyperaceae.** Sedges. Grass-like herbs with 3-ranked leaves; perianth segments bristly or none; pistil 1-celled; ovules anatropous, erect. *Cyperus, Scirpus, Fimbristylis, Rhynchospora, Carex.* (Sp. 1959.) (Pf. II, 2, 98.)

Family 31. **Poaceae.** Grasses. Mostly erect herbs with hollow, jointed stems, and 2-ranked leaves; perianth segments of 2 to 6 scales or vestiges; pistil 1-celled; ovules anatropous, ascending. *Bambusa, Bromus, Triticum, Bouteloua, Avena, Agrostis, Phalaris, Oryza, Panicum, Andropogon, Zea.* (Sp. 3545.) (Pf. II, 2, 1.)

Sub-Class MONOCOTYLEDONEAE–EPIGYNAE. Perianth and stamens arising above the carpels; (carpels inferior). Flowers from actinomorphic to zygomorphic.

Order HYDRALES. Compound tricarpellary pistil, inferior to all other parts of the flower; flower-leaves in each whorl alike in shape (flower regular); seeds without endosperm.

Family 32. **Vallisneriaceae.** Tape-Grasses. Small aquatic herbs mostly inhabiting the fresh waters of temperate climates. *Vallisneria, Hydrocharis, Philotria.* (Pf. II, 1, 238.)

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Order IRIDALES. Compound tricarpellary pistil, inferior; flower-leaves in each whorl mostly alike in shape (flower regular, actinomorphic); seeds with endosperm.

Family 33. **Amaryllidaceae.** Amaryllises. Leaves narrow, or the blade broad, with longitudinal veins; pistil 3-celled; ovules many; stamens 6 or 3. *Amaryllis, Crinum, Narcissus, Agave, Hypoxis.* (Pf. II, 5, 97.)

Family 34. **Haemodoraceae.** Leaves sword-shaped; pistil 3-celled; ovules 1 to many; stamens 6. *Haemodorum.* (Pf. II, 5, 92.)

Family 35. **Iridaceae.** Leaves sword-shaped; pistil 3-celled; ovules many; stamens 3. *Crocus, Iris, Tigridia, Sisyrinchium, Ixia, Tritonia, Gladiolus, Freesia.* (Pf. II, 5, 137.)

Family 36. **Velloziaceae.** Woody-stemmed leafy plants, with a 3-celled pistil containing many ovules, stamens 6 or more. *Vellozia.* (Pf. II, 5, 125.)

Family 37. **Taccaceae.** Stemless herbs, with broad pinnately parallel-veined leaves; pistil 1-celled; ovules many; stamens 6. *Tacca.* (Pf. II, 5, 127.)

Family 38. **Dioscoreaceae.** Yams. Mostly twining herbs with broad, petioled, longitudinally-veined leaves; pistil 3-celled; ovules 2 in each cell; stamens 6. *Dioscorea, Testudinaria.* (Pf. II, 5, 130.)

Family 39. **Bromeliaceae.** Pine-Apples. Leaves mostly rosulate; external perianth whorl calycine; pistil 3-celled; ovules many; stamens 6. *Tillandsia, Dendropogon, Ananas.* (Pf. II, 4, 32.)

Family 40. **Musaceae.** Bananas. Large herbs, the stem often composed of the sheathing leaf-bases; perianth petaloid of 6, often dissimilar segments; stamens 6; pistil 3-celled; ovules 1 to very many. *Strelitzia, Musa.* (Pf. II, 6, 1.)

Family 41. **Zingiberaceae.** Gingers. Perennial, medium sized herbs, with creeping or tuberous rootstocks; perianth irregular; stamen 1, anther 2-celled, with several "staminodes"; pistil 3-

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celled; ovules 1 or more in each cell. *Curcuma, Zingiber, Amomum.* (Pf. II, 6, 10.)

Family 42. **Cannaceae.** Cannas. Perennial herbs of medium size, with simple pinnately-veined leaves; perianth irregular; stamen 1, anther 1-celled, with several "staminodes"; pistil 3-celled; ovules 1 to many. *Canna.* (Pf. II, 6, 30.)

Family 43. **Marantaceae.** Perennial herbs of variable habit, leaves parallel or pinnately-veined; perianth irregular; functional stamen 1, with several "staminodes"; pistil 3-celled; ovules 1 in each cell. *Calathea, Maranta.* (Pf. II, 6, 33.)

Order ORCHIDALES. Compound tricarpellary pistil, inferior; flower-leaves in each whorl mostly unlike in shape (flower irregular, zygomorphic); seeds without endosperm.

Family 44. **Burmanniaceae.** Flowers irregular; stamens 3 or 6. *Burmannia.* (Pf. II, 6, 44.)

Family 45. **Orchidaceae.** Orchids. Flowers irregular; stamens 1 or 2. *Cypripedium, Orchis, Platanthera, Vanilla, Spiranthes.* (Sp. 7521.) (Pf. II, 6, 52.)

Class 33. DICOTYLEDONEAE. The Dicotyledons. Leaves of young sporophore opposite; leaves of mature sporophore usually reticulate-veined; fibrovascular bundles of the stems in one or more rings. (Species about 108,800.)

Sub-Class DICOTYLEDONEAE–AXIFLORAE. "Axis Flowers." Axis of the flower normally cylindrical, spherical, hemispherical or flattened, bearing on its surface the hypogynous perianth, stamens and pistils (or the stamens may be attached to the corolla).

Super-Order AXIFLORAE-APOPETALAE-POLYCARPELLATAE. Carpels typically many, separate or united; petals separate. Flowers mostly actinomorphic. This Super-Order has much in common with the Alismatales, and also with the Calyciflorae Apopetalae. In fact, these three groups appear to diverge from a common point of origin.

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Order RANALES. All parts of the flower free (not united). Pistils many to 1, monocarpellary (or rarely united); stamens generally indefinite; embryo mostly small, in copious endosperm.

Family 46. **Magnoliaceae.** Magnolias. Petals present, in one to many whorls; receptacle usually elongated; shrubs and trees with alternate leaves and usually large flowers. *Magnolia, Liriodendron.* (Pf. III, 2, 12.)

Family 47. **Calycanthaceae.** Petals present, in many whorls; seeds without endosperm; shrubs with opposite leaves. *Calycanthus.* (Pf. III, 2, 92.)

Family 48. **Monimiaceae.** Petals absent; pistils many, 1-ovuled, embedded in the receptacle; trees and shrubs with opposite or whorled leaves, and diclinous flowers. *Kibara, Monimia, Siparuna.* (Pf. III, 2, 94.)

Family 49. **Cercidiphyllaceae.** Trees with naked flowers, many stamens, and a single whorl of superior pistils. *Cercidiphyllum.* (Pf. III, 2, 21.)

Family 50. **Trochodendraceae.** Trees and shrubs with naked flowers, many stamens, and a single whorl of 2 to many partly inferior pistils. *Trochodendron.* (Pf. III, 2, 21.)

Family 51. **Leitneriaceae.** Shrubs with alternate leaves and dioecious flowers in catkins; perianth minute or 0; pistil 1-celled, 1-ovuled; endosperm minute. *Leitneria.* (Pf. III, 1, 28.)

Family 52. **Anonaceae.** Papaws. Petals present, in two whorls of 3 each; endosperm ruminated; trees or shrubs with alternate leaves. *Asimina, Anona.* (Pf. III, 2, 23.)

Family 53. **Lactoridaceae.** Much-branched shrubs of the South Pacific Islands, with alternate leaves, and apetalous flowers. *Lactoris.* (Pf. III, 2, 19.)

Family 54. **Gomortegaceae.** Large trees of South America, with opposite evergreen leaves, and acyclic flowers; pistils 2–3, each with 1 ovule. *Gomortega.* (Pf. Nach. 172.)

Family 55. **Myristicaceae.** Nutmegs. Petals absent; pistil 1 (or a second rudiment), 1-seeded; endosperm ruminated; trees

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or shrubs with alternate leaves and small, inconspicuous, dioecious flowers. *Myristica.* (Pf. III, 2, 40.)

Family 56. **Saururaceae.** Rhizomatous, marsh herbs, with alternate leaves; perianth none; pistil of 3 to 5 carpels, more or less united. *Saururus.* (Pf. III, 1, 1.)

Family 57. **Piperaceae.** Peppers. Herbs, shrubs, and trees with alternate (or opposite) leaves; flowers perfect or diclinous, mostly spicate; perianth 0; pistil 1-celled, 1-ovuled; endosperm present. *Piper, Macropiper.* (Pf. III, 1, 3.)

Family 58. **Lacistemaceae.** Shrubs and trees with alternate leaves; perianth 0; stamen 1; pistil 3- or 2-carpellary. *Lacistema.* (Pf. III, 1, 14.)

Family 59. **Chloranthaceae.** No perianth whatever; pistil 1, with 1 ovule; mostly trees and shrubs, with opposite leaves, and small flowers. *Chloranthus.* (Pf. III, 1, 12.)

Family 60. **Ranunculaceae.** Buttercups. Petals present in one whorl, or absent; sepals deciduous; mostly herbs with alternate leaves. *Myosurus, Ranunculus, Anemone, Clematis.* (Pf. III, 2, 43.)

Family 61. **Lardizabalaceae.** Petals and sepals 6 each; stamens 6; twining or erect shrubs, with alternate leaves. *Akebia, Lardizabala.* (Pf. III, 2, 67.)

Family 62. **Berberidaceae.** Barberries. Petals usually present, in 1 to 3 whorls; pistil 1 (rarely more), with many ovules; mostly shrubs with alternate leaves and perfect flowers. *Podophyllum, Berberis.* (Pf. III, 2, 70.)

Family 63. **Menispermaceae.** Moonseeds. Petals present, in 2 whorls; twining shrubs with alternate leaves and small diclinous flowers. *Menispermum, Cocculus.* (Pf. III, 2, 78.)

Family 64. **Lauraceae.** Laurels. Aromatic trees and shrubs with alternate simple leaves; disk 0; petals 0; ovule 1, pendulous; endosperm 0. *Cinnamomum, Persea, Ocotea, Umbellularia, Sassafras, Litsea, Laurus.* (Pf. III, 2, 106.)

Family 65. **Nelumbaceae.** Lotuses. Large aquatic herbs with

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peltate leaves, and many separate carpels immersed in the flattish axis ("receptacle"). *Nelumbo.* (Pf. III, 2, 1.)

Family 66. **Cabombaceae.** Water-shields. Small aquatic herbs with floating, sometimes peltate leaves, and few to many separate carpels (not immersed). *Cabomba, Brasenia.* (Pf. III, 2, 1.)

Family 67. **Ceratophyllaceae.** Aquatic herbs with verticillate, divided leaves; flowers dioecious; perianth 0; pistil 1-celled, 1-ovuled; endosperm 0. *Ceratophyllum.* (Pf. III, 2, 10.)

Family 68. **Dilleniaceae.** Petals present, in one whorl; sepals persistent; mostly shrubs and trees with alternate leaves. *Dillenia, Actinidia.* (Pf. III, 6, 100.)

Family 69. **Winteranaceae.** Aromatic trees with alternate leaves; sepals 4–5; petals 4–5 (or 0); stamens 20–30; pistil 2- to 5-carpellary. *Winterana, Cinnamodendron.* (Pf. III, 6, 314.)

Order MALVALES. Pistil usually of 3 to many carpels, with as many cells (sometimes greatly reduced); ovules few; stamens indefinite, monadelphous, branched, or by reduction separate and few; endosperm present or absent.

Family 70. **Sterculiaceae.** Trees and shrubs with alternate leaves; flowers perfect or diclinous, with or without petals; stamens mon- or polyadelphous, 2-celled; pistil 4- to many-celled; endosperm present or 0. *Theobroma, Sterculia.* (Pf. III, 6, 69.)

Family 71. **Malvaceae.** Mallows. Herbs, shrubs, and trees with alternate leaves; flowers perfect, with petals; stamens monadelphous, 1-celled; pistil 5- to many-celled; endosperm little or 0. *Abutilon, Althaea, Malva, Hibiscus, Gossypium.* (Pf. III, 6, 30.)

Family 72. **Bombaceae.** Tropical trees with alternate, palmate leaves; sepals and petals present; stamineal column 5–8 cleft. *Adansonia, Bombax.* (Pf. III, 6, 53.)

Family 73. **Scytopetalaceae.** Trees of the southern hemisphere, with alternate leathery leaves; sepals small; petals much larger, valvate; stamens many. *Scytopetalum.* (Pf. Nach. 242.)

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Family 74. **Chlaenaceae.** Madagascar trees and shrubs with alternate leaves; inflorescence dichotomous; petals contorted. *Rhodochlaena, Leptochlaena.* (Pf. III, 6, 168.)

Family 75. **Gonystylaceae.** East Indian trees with leathery, evergreen leaves, pentamerous flowers, and a berry-like fruit. *Gonystylus.* (Pf. Nach. 231.)

Family 76. **Tiliaceae.** Lindens. Trees, shrubs (and herbs) with mostly alternate leaves; flowers mostly perfect, with petals; stamens free, 2-celled; pistil 2- to 10-celled; endosperm present or 0. *Corchorus, Tilia, Grewia.* (Pf. III, 6, 8.)

Family 77. **Elaeocarpaceae.** Tropical trees and shrubs, with alternate or opposite simple leaves; sepals and petals present; stamens distinct, many; pistil of 2–several carpels. *Elaeocarpus, Aristotelia.* (Pf. III, 6, 1.)

Family 78. **Balanopsidaceae.** Australian trees and shrubs with alternate leaves; flowers dioecious, apetalous, the staminate in catkins, the pistillate solitary, producing acorn-like, 2-celled, 2-seeded fruits; seeds endospermous. This family is doubtfully given place here, and it may be that it should be placed near the *Fagaceae,* as is done by Baillon. *Balanops.* (Pf. Nach. 114.)

Family 79. **Ulmaceae.** Elms. Trees and shrubs with alternate, simple leaves, small apetalous flowers, a 1-celled (rarely 2-celled) ovary, which develops into a samara, drupe or nut. *Ulmus, Celtis, Zelkova, Planera.* (Pf. III, 1, 59.)

Family 80. **Moraceae.** Figs. Trees, shrubs, and herbs, mostly with a milky juice, and alternate or opposite leaves; flowers apetalous, monoecious or dioecious; ovary 1-celled, 1-ovuled. *Morus, Toxylon, (Maclura), Broussonetia, Dorstenia, Artocarpus, Castilloa, Antiaris, Ficus, Humulus, Cannabis.* (Pf. III, 1, 66.)

Family 81. **Urticaceae.** Nettles. Herbs, shrubs, and trees with alternate or opposite leaves; flowers mostly diclinous, without petals; stamens few, 2-celled; pistil monocarpellary, 1-celled, mostly 1-seeded; endosperm none. *Urtica, Boehmeria.* (Pf. III, 1, 98.)

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Order SARRACENIALES. Pistil of 3 to 5 carpels united; placentae parietal or central; seeds indefinite; herbs with "insectivorous" leaves; related to the Mallows.

Family 82. **Sarraceniaceae.** Pitcher Plants. Herbs with pitcher-shaped leaves; sepals 4–5; petals 5–0; stamens indefinite; pistil 3–5-carpellary. *Sarracenia, Darlingtonia.* (Pf. III, 2, 244.)

Family 83. **Nepenthaceae.** Pitcher Plants. Tropical undershrubs with pitcher-shaped leaves; sepals 4 or 3; petals 0; stamens 4–16; pistil 4- to 3-carpellary. *Nepenthes.* (Pf. III, 2, 253.)

Order GERANIALES. Receptacle usually with an annular or glandular disk; pistil of several carpels; ovules 1 to 2 (or many), mostly pendulous.

Family 84. **Geraniaceae.** Geraniums. Herbs, shrubs, and trees, with opposite or alternate (compound or simple) leaves; torus elongated; pistil lobed, 3- to 5-celled; endosperm sparse or 0. *Geranium, Pelargonium, Erodium.* (Pf. III, 4, 1.)

Family 85. **Oxalidaceae.** Sorrels. Herbs, rarely shrubs, the juice sour; leaves mostly 3-foliate; flowers pentamerous. *Oxalis.* (Pf. III, 4, 15.)

Family 86. **Tropaeolaceae.** Nasturtiums. Succulent, prostrate or climbing herbs, with alternate, peltate leaves, and irregular long-peduncled, spurred flowers; stamens 8; ovary tricarpellary. *Tropaeolum.* (Pf. III, 4, 23.)

Family 87. **Balsaminaceae.** Touch-me-nots. Succulent herbs, mostly erect, with alternate leaves, and irregular, spurred axillary flowers; stamens 5; ovary pentacarpellary. *Impatiens.* (Pf. III, 5, 383.)

Family 88. **Limnanthaceae.** Succulent marsh herbs, with alternate, pinnate leaves; flowers pentamerous; stamens 10; carpels 5. *Limnanthes.* (Pf. III, 5, 136.)

Family 89. **Linaceae.** Flaxes. Herbs and shrubs, with alternate simple leaves; pistil 3- to 5-celled; endosperm fleshy or 0. *Linum.* (Pf. III, 4, 27.)

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Family 90. **Humiriaceae.** Trees with alternate simple leaves; pistil 5- to 7-celled; endosperm copious. *Humiria, Saccoglottis.* (Pf. III, 4, 35.)

Family 91. **Erythroxylaceae.** Shrubs and trees, with mostly alternate, simple leaves; flowers pentamerous; stamens 10; ovary 2- to 3-carpellary. *Erythroxylon.* (Pf. III, 4, 37.)

Family 92. **Zygophyllaceae.** Herbs and shrubs with usually opposite, compound leaves; pistil lobed, 4- to 5-celled; endosperm copious or 0. *Zygophyllum, Guaiacum, Larrea.* (Pf. III, 4, 74.)

Family 93. **Cneoraceae.** Shrubs with alternate entire leaves, trimerous or tetramerous flowers; pistil 3- or 4-celled, each cell with one ovule. *Cneorum.* (Pf. III, 4, 93.)

Family 94. **Rutaceae.** Oranges. Herbs, shrubs, and trees with glandular-dotted, opposite, simple, or compound leaves; pistil lobed, 4- to 5-celled; endosperm fleshy or 0. *Xanthoxylum, Ruta, Dictamnus, Ptelea, Limonia, Citrus.* (Pf. III, 4, 95.)

Family 95. **Simarubaceae.** Trees and shrubs with generally alternate, non-glandular, simple, or compound leaves; pistil lobed, 1- to 5-celled; endosperm fleshy or 0. *Simaruba, Quassia, Holacantha, Ailanthus.* (Pf. III, 4, 202.)

Family 96. **Burseraceae.** Balsamic trees and shrubs with alternate compound leaves; pistil 2- to 5-celled; endosperm 0. *Protium, Canarium, Bursera.* (Pf. III, 4, 231.)

Family 97. **Meliaceae.** Trees and shrubs with alternate compound leaves; pistil 3- to 5-celled; endosperm present or 0. *Swietenia, Melia.* (Pf. III, 4, 258.)

Family 98. **Malpighiaceae.** Trees and shrubs with usually opposite, simple or lobed leaves; pistil tricarpellary; endosperm 0. *Stigmatophyllon, Malpighia, Byrsonima.* (Pf. III, 4, 41.)

Family 99. **Trigoniaceae.** Trees and shrubs with opposite simple leaves and irregular flowers; pistil tricarpellary. *Trigonia.* (Pf. III, 4, 309.)

Family 100. **Vochysiaceae.** Shrubs and trees with opposite or

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whorled leaves; sepals 5; petals 1, 3, or 5; stamens several, usually but one fertile. *Vochysia, Qualea.* (Pf. III, 4, 312.)

Family 101. **Polygalaceae.** Herbs, shrubs, and trees with alternate leaves; sepals 5; petals 3–5; stamens usually 8. *Polygala, Xanthophyllum.* (Pf. III, 4, 323.)

Family 102. **Tremandraceae.** Small shrubs with alternate, opposite, or whorled leaves; sepals and petals 3, 4, or 5 each; stamens twice as many. *Tremandra, Tetratheca.* (Pf. III, 4, 320.)

Family 103. **Dichapetalaceae.** Trees and shrubs with alternate simple leaves; pistil 2- to 3-celled; endosperm 0. *Dichapetalum, Tapura.* (Pf. III, 4, 345.)

Family 104. **Euphorbiaceae.** Spurges. Herbs, shrubs, and trees, mostly with a milky juice and alternate or opposite leaves; flowers diclinous, with a perianth of 1 or 2 whorls, or wanting; stamens 2-celled, free or united; pistil usually 3-celled; endosperm copious. *Euphorbia, Pedilanthus, Phyllanthus, Croton, Mallotus, Acalypha, Ricinus, Jatropha, Manihot, Stillingia.* (Sp. 4319.) (Pf. III, 5, 1.)

Family 105. **Callitrichaceae.** Floating herbs with opposite sessile leaves; flowers sessile in the leaf-axils; perianth none; stamens 1 or 2; ovary 2-celled. *Callitriche.* (Pf. III, 5, 120.)

Order GUTTIFERALES. Pistil mostly of 2 or more carpels, 2-celled, with axile placentae; stamens usually indefinite; endosperm usually wanting.

Family 106. **Theaceae.** Teas. Trees and shrubs usually with alternate leaves; inflorescence various; petals imbricated. *Thea, Stuartia.* (Pf. III, 6, 175.)

Family 107. **Cistaceae.** Herbs and shrubs with opposite (or alternate) leaves; sepals 3–5; petals 5; stamens many; pistil 3- to 5-carpellary. *Cistus, Helianthemum, Hudsonia.* (Pf. III, 6, 299.)

Family 108. **Guttiferaceae.** Trees, shrubs, and herbs, with opposite or whorled, glandular-dotted leaves; inflorescence often

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trichotomous; petals imbricated or contorted. *Hypericum, Mammea, Clusia, Garcinia.* (Pf. III, 6, 194.)

Family 109. **Eucryphiaceae.** Evergreen trees of the southern hemisphere, with opposite leaves; flowers large, tetramerous; stamens many; pistil many-celled. *Eucryphia.* (Pf. III, 6, 129.)

Family 110. **Ochnaceae.** Shrubs and trees with alternate, coriaceous, simple leaves; pistil lobed, 1- to 10-celled; endosperm fleshy or 0. *Ochna.* (Pf. III, 6, 131.)

Family 111. **Dipterocarpaceae.** Trees and shrubs with alternate leaves; inflorescence panicled; petals contorted; fruiting calyx enlarged, and wing-like. *Dipterocarpus.* (Pf. III, 6, 243.)

Family 112. **Caryocaraceae.** Tropical trees and shrubs, with alternate trifoliate leaves, large showy flowers, and many long stamens. *Caryocar.* (Pf. III, 6, 153.)

Family 113. **Quiinaceae.** South American trees and shrubs, with opposite or whorled simple leaves; sepals 4–5; petals 4–5; stamens 15–30. *Quiina.* (Pf. III, 6, 165.)

Family 114. **Marcgraviaceae.** Tropical trees and shrubs, with alternate, simple leaves; sepals 2–6; petals as many; stamens as many or more; ovary 3–5-celled. *Marcgravia.* (Pf. III, 6, 157.)

Family 115. **Flacourtiaceae.** Trees and shrubs of the tropics, with alternate leaves; sepals 2–15; petals 10–0; stamens indefinite; carpels 2–10. *Pangium, Flacourtia, Samyda.* (Pf. III, 6a, 1.)

Family 116. **Bixaceae.** Shrubs with alternate leaves; sepals 3 to 7; petals large; stamens indefinite; pistil bicarpellary. *Bixa.* (Pf. III, 6, 307.)

Family 117. **Cochlospermaceae.** Trees and shrubs with alternate lobed or compound leaves; petals large; stamens indefinite; pistil 3- to 5-carpellary. *Cochlospermum.* (Pf. III, 6, 312, and Nach. 251.)

Family 118. **Violaceae.** Violets. Herbs and shrubs with alternate (or opposite) leaves; sepals and petals 5, irregular; stamens

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5; pistil 3-carpellary with 3 parietal placentae. *Rinorea, Hybanthus, Viola.* (Pf. III, 6, 322.)

Family 119. **Malesherbiaceae.** South American branching herbs or undershrubs, with pentamerous flowers. *Malesherbia.* (Pf. III, 6a, 65.)

Family 120. **Turneraceae.** Herbs and shrubs with alternate leaves; flowers perfect; sepals and petals dissimilar; stamens definite; ovary free; endosperm copious. *Turnera.* (Pf. III, 6a, 57.)

Family 121. **Passifloraceae.** Passion Flowers. Climbing herbs and shrubs (a few trees) with alternate leaves; flowers perfect; sepals and petals similar, distinct; stamens definite; ovary free; endosperm fleshy. *Adenia, Passiflora.* (Pf. III, 6a, 69.)

Family 122. **Achariaceae.** South African herbs and undershrubs, related to the *Passifloraceae;* but with the petals united. *Acharia.* (Pf. III, 6a, 92.)

Family 123. **Caricaceae.** Papaws. Succulent-stemmed tropical trees, mostly with palmate leaves; flowers pentamerous; fruit a many seeded berry. *Carica.* (Pf. III, 6a, 94.)

Family 124. **Stachyuraceae.** Asiatic shrubs and trees with alternate leaves; sepals 4; petals 4; stamens 8. *Stachyurus.* (Pf. III, 6, 192.)

Family 125. **Koeberliniaceae.** Leafless, thorny Texan and Mexican shrubs, with tetramerous flowers; pistil bicarpellary. *Koeberlinia.* (Pf. III, 6, 319.)

Order RHOEADALES. Pistil of 2 or more united carpels, mostly 1-celled, with parietal placentae; stamens indefinite or definite; endosperm none or copious.

Family 126. **Papaveraceae.** Poppies. Mostly milky-juiced plants, with alternate leaves; sepals 2–3; petals 4 or more (or 0); stamens indefinite; pistil many-carpellary. *Eschscholtzia, Sanguinaria, Argemone, Papaver, Bicuculla, Fumaria.* (Pf. III, 2, 130.)

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Family 127. **Tovariaceae.** Annual herbs of the tropics, with alternate leaves; 8-merous flowers. *Tovaria.* (Pf. III, 2, 207.)

Family 128. **Nymphaeaceae.** Water Lilies. Petals present, in 1 to many whorls; pistils closely united; aquatic herbs with floating leaves. *Victoria, Castalia, Nymphaea.* (Pf. III, 2, 1.)

Family 129. **Moringaceae.** Trees of the tropics, with decompound leaves and pentamerous flowers, and producing bean-like pods. *Moringa.* (Pf. III, 2, 242.)

Family 130. **Resedaceae.** Mignonettes. Herbs and shrubs with scattered leaves; sepals 4–8 (or 2 or 0); stamens 3–40; pistil 2- to 6-carpellary. *Reseda.* (Pf. III, 2, 237.)

Family 131. **Capparidaceae.** Capers. Herbs, shrubs, and trees with alternate or opposite leaves; sepals 4; petals 4 (or 0); stamens 4 (or many); pistil 2- to 6-carpellary. *Cleome, Capparis.* (Pf. III, 2, 209.)

Family 132. **Brassicaceae.** Mustards. Herbs, rarely shrubs, with alternate (or opposite) leaves; sepals 4; petals 4; stamens 6 or 4; pistil 2-carpellary. *Sinapis, Brassica, Raphanus, Bursa, Alyssum.* (Pf. III, 2, 145.)

Order CARYOPHYLLALES. Pistil usually of 3 or more united carpels, mostly 1-celled, with a free central placenta, and many ovules (sometimes reduced to a one-celled, one-ovuled ovary); stamens as many or twice as many as the petals; seeds endospermous, usually with a curved embryo.

Family 133. **Caryophyllaceae.** Pinks. Herbs (and shrubs) with opposite leaves; petals 3–5, stalked or not; ovules many on a central placenta. *Silene, Lychnis, Dianthus, Alsine, Paronychia, Illecebrum.* (Pf. III, 1b, 61.)

Family 134. **Elatinaceae.** Small marsh herbs or undershrubs, with small, opposite or whorled leaves; inflorescence axillary; petals imbricated; stamens 4–10. *Elatine.* (Pf. III, 6, 277.)

Family 135. **Portulacaceae.** Purslanes. Herbs, or somewhat woody plants, usually somewhat succulent; sepals usually 2; petals 4–5; seeds many. *Claytonia, Portulaca.* (Pf. III, 1b, 51.)

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Family 136. **Aizoaceae.** Herbaceous or shrubby plants with mostly opposite or verticillate leaves; calyx tetramerous or pentamerous; corolla often wanting; ovary 3- to 5-celled with numerous ovules in each cell. *Mollugo, Sesuvium, Mesembrianthemum.* (Pf. III, 1b, 33.)

Family 137. **Frankeniaceae.** Herbs and undershrubs with opposite leaves; petals 4–5, long-stalked; ovules many, on 2–4 parietal placentae. *Frankenia.* (Pf. III, 6, 283.)

Family 138. **Fouquieriaceae.** Shrubs with small thorn-like leaves, and panicled tubular flowers. *Fouquieria.* (Pf. III, 6, 298.)

Family 139. **Tamaricaceae.** Tamarixes. Shrubs and herbs with minute, alternate, deciduous leaves; petals 5; ovules many on central or parietal placentae. *Tamarix.* (Pf. III, 6, 289.)

Family 140. **Salicaceae.** Willows. Shrubs and trees with alternate leaves; perianth 0; ovules many on 2–4 parietal placentae. Here regarded as reduced, dioecious, apetalous, *Tamricaceae. Salix, Populus.* (Pf. III, 1, 29.)

Family 141. **Podostemonaceae.** Riverweeds. Small aquatic, sometimes thallose, plants; flowers perfect or diclinous; perianth 0; pistil 1- to 3-celled; ovules many; endosperm 0. *Podostemon.* (Pf. III, 2a, 1.)

Family 142. **Hydrostachydaceae.** Large tuber-forming Madagascar plants, with naked, dioecious flowers, and numerous ovules. *Hydrostachys.* (Pf. III, 2a, 22.)

Family 143. **Phytolaccaceae.** Pokeweeds. Herbs, shrubs, and trees with usually alternate leaves; petals 0 (or 4–5); carpels several, distinct or nearly so, 1-ovuled. *Phytolacca.* (Pf. III, 1b, 1.)

Family 144. **Basellaceae.** Herbaceous, or shrubby plants, with mostly alternate leaves; calyx pentamerous; corolla none; stamens 5; ovary 1-celled, with one ovule. *Basella, Boussingaultia.* (Pf. III, 1a, 124.)

Family 145. **Amaranthaceae.** Amaranths. Herbs, shrubs

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(and trees) with opposite leaves; petals 0; ovules 1 or more, basal, campylotropous. *Celosia, Amaranthus, Froelichia.* (Pf. III, 1a, 91.)

Family 146. **Chenopodiaceae.** The Goosefoots. Herbs, shrubs (and trees) with mostly alternate leaves; petals 0; ovule 1, basal, campylotropous. *Beta, Chenopodium, Spinacia, Atriplex, Sarcobatus, Salsola.* (Pf. III, 1a, 36.)

Family 147. **Polygonaceae.** Buckwheats. Herbs, shrubs, and trees with alternate leaves; petals 0; ovule 1, erect, orthotropous. *Eriogonum, Rumex, Rheum, Polygonum, Fagopyrum, Coccoloba.* (Pf. III, 1a, 1.)

Family 148. **Nyctaginaceae.** Four o'clocks. Herbs and shrubs with opposite leaves; petals 0; sepals petaloid; ovule 1, erect. *Mirabilis, Bougainvillea, Allionia.* (Pf. III, 1b, 14.)

Family 149. **Cynocrambaceae.** Annual, succulent herbs, with petioled leaves, opposite below, alternate above; flowers monoecious, apetalous, small, axillary. *Cynocrambe.* (Pf. III, 1a, 121.)

Family 150. **Batidaceae.** Shrubs with opposite leaves; petals 0; ovary 4-celled; ovule solitary, erect. Very doubtfully placed here. *Batis.* (Pf. III, 1a, 118.)

Super-Order AXIFLORAE-GAMOPETALAE-POLYCARPELLATAE. Carpels typically many, united; petals united. Flowers actinomorphic.

Order PRIMULALES. Flowers regular, mostly perfect; stamens mostly opposite to the corolla-lobes; ovary pluricarpellary, mostly 1-celled, with a free central placenta.

Family 151. **Primulaceae.** Primroses. Herbs with alternate or opposite, sometimes clustered, leaves; stamens opposite the petals; ovules many; fruit a capsule dehiscing longitudinally from the apex, or circumscissillely. *Primula, Androsace, Lysimachia, Cyclamen, Dodecatheon.* (Pf. IV, 1, 98.)

Family 152. **Plantaginaceae.** Plantains. Herbs with alternate or clustered leaves; stamens alternate with the petals; ovary

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mostly 2-celled; ovules many; placenta axile; fruit a capsule dehiscing circumscissillely. *Plantago.* (Pf. IV, 3b, 363.)

Family 153. **Plumbaginaceae.** Leadworts. Herbs with alternate or clustered leaves; stamens opposite the petals; ovule 1, basal, anatropous; fruit capsular; dehiscence valvate or irregular. *Plumbago, Armeria.* (Pf. IV, 1, 116.)

Family 154. **Theophrastaceae.** Tropical trees and shrubs closely related to the preceding family, and usually included in it. *Theophrasta, Jacquinia.* (Pf. IV, 1, 88.)

Family 155. **Myrsinaceae.** Trees and shrubs with alternate (or opposite) leaves; stamens opposite the petals; ovules usually few; fruit a drupe or berry. *Myrsine, Ardisia.* (Pf. IV, 1, 84.)

Order ERICALES. Flowers regular, perfect; stamens alternate with the corolla-lobes; cells of the ovary, or placentae 2 to many; seeds minute.

Family 156. **Clethraceae.** White Alders. Shrubs and trees of warm climates, with alternate deciduous leaves; stamens 10; pistil tricarpellary. *Clethra.* (Pf. IV, 1, 1.)

Family 157. **Ericaceae.** Heaths. Shrubs and small trees with mostly evergreen leaves; ovary typically superior, 2- to 10-celled; anthers usually dehiscing by an apical pore. *Rhododendron, Kalmia, Gaultheria, Arctostaphylos, Gaylussacia, Vaccinium, Calluna, Erica.* (Pf. IV, 1, 15.)

Family 158. **Epacridaceae.** Shrubs and small trees with mostly alternate evergreen leaves; ovary superior, mostly 2- to 10-celled; fruit capsular or drupaceous; anthers dehiscing by a slit. *Epacris.* (Pf. IV, 1, 66.)

Family 159. **Diapensiaceae.** Low undershrubs, with alternate evergreen leaves; ovary superior, 3-celled; fruit a capsule; anthers dehiscing by a slit. *Diapensia, Shortia.* (Pf. IV, 1, 80.)

Family 160. **Pirolaceae.** Wintergreens. Low evergreen, or chlorophylless herbs, with pentamerous or tetramerous (rarely hexamerous) flowers; stamens twice as many as the petals; ovary 4- to 6-celled. *Pirola, Chimaphila, Monotropa.* (Pf. IV, 1, 3.)

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Family 161. **Lennoaceae.** Parasitic, leafless herbs; ovary superior, 10- to 14-carpellary, 20- to 28-celled; ovules solitary; anthers dehiscing by a slit. *Lennoa.* (Pf. IV, 1, 12.)

Order EBENALES. Flowers regular, perfect, or diclinous; stamens opposite to the corolla-lobes; ovary 2- to many-celled; seeds mostly solitary or few, usually large.

Family 162. **Sapotaceae.** Sapodillas. Tropical trees and shrubs with mostly alternate leaves; flowers mostly perfect; stamens attached to the corolla; ovary superior. *Achras, Sideroxylon, Chrysophyllum, Mimusops.* (Pf. IV, 1, 126.)

Family 163. **Ebenaceae.** Ebonys. Tropical and subtropical trees and shrubs, with very hard wood, and mostly alternate leaves; flowers mostly dioecious; stamens usually free from the corolla; ovary superior. *Diospyros, Maba.* (Pf. IV, 1, 153.)

Family 164. **Symplocaceae.** Tropical and subtropical trees and shrubs, with mostly perfect flowers; stamens many. *Symplocos.* (Pf. IV, 1, 165.)

Family 165. **Styracaceae.** Styraxes. Trees and shrubs with alternate leaves; flowers mostly perfect; stamens attached to the corolla; ovary usually inferior. *Halesia, Styrax.* (Pf. IV, 1, 172.)

Super-Order AXIFLORAE-GAMOPETALAE-DICARPELLATAE. Carpels typically two, united; petals united. Flowers from actinomorphic to zygomorphic.

Order POLEMONIALES. Corolla actinomorphic (regular); stamens alternate with the corolla-lobes, and of the same number; leaves mostly alternate.

Family 166. **Polemoniaceae.** Phloxes. Herbs (and shrubs) with alternate or opposite leaves; corolla-lobes contorted; ovary tricarpellary, 3-celled; ovules 2 or more. *Cobaea, Phlox, Gilia, Polemonium.* (Pf. IV, 3a, 40.)

Family 167. **Convolvulaceae.** Morning Glories. Herbs, shrubs (and trees) with alternate leaves; corolla-limb more or less plicate (rarely imbricated); ovary 2- (3- to 5-) celled; ovules

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few. *Evolvulus, Quamoclit, Ipomoea, Convolvulus, Cuscuta* (parasitic). (Pf. IV, 3a, 1.)

Family 168. **Hydrophyllaceae.** Herbs with radical or alternate (rarely opposite) leaves; corolla-lobes imbricated (or contorted); ovary 1- or incompletely 2-celled; ovules 2 or more. *Hydrophyllum, Phacelia, Nama.* (Pf. IV, 3a, 54.)

Family 169. **Borraginaceae.** Forget-me-nots. Herbs, shrubs, and trees with alternate leaves; corolla-lobes imbricated (or contorted); ovary bicarpellary, 4-celled, 4-lobed; ovules solitary. *Heliotropium, Cynoglossum, Oreocarya, Borrago, Myosotis, Mertensia, Lithospermum.* (Pf. IV, 3a, 71.)

Family 170. **Nolanaceae.** Herbaceous or suffrutescent prostrate plants, with alternate, entire leaves; calyx 5-parted; corolla long funnel-shaped; stamens 5, inserted on the corolla; pistils 5 or united. *Nolana.* (Pf. IV, 3b, 1.)

Family 171. **Solanaceae.** Nightshades. Herbs, shrubs (and trees) with alternate leaves; corolla-limb more or less plicate (rarely imbricated); ovary mostly 2-celled; ovules many. *Lycium, Atropa, Hyoscyamus, Physalis, Capsicum, Solanum, Datura, Nicotiana, Petunia.* (Pf. IV, 3b, 4.)

Order GENTIANALES. Corolla actinomorphic (regular); stamens alternate with the corolla-lobes, and usually of the same number; leaves opposite (rarely alternate).

Family 172. **Oleaceae.** Olives. Shrubs and trees (rarely herbs) with mostly opposite leaves; corolla-lobes valvate or 0; stamens 2 (or 4); ovary 2-celled; ovules 1 to 3. *Syringa, Olea, Jasminum, Fraxinus.* (Pf. IV, 2, 1.)

Family 173. **Salvadoraceae.** Shrubs and trees with opposite undivided leaves; corolla-lobes imbricated; stamens 4; ovary 2-celled; ovules 2. *Salvadora.* (Pf. IV, 2, 17.)

Family 174. **Loganiaceae.** Herbs, shrubs, and trees with mostly opposite simple leaves; corolla-lobes imbricated or contorted; stamens 4 to 5 (or indefinite); ovary 2- to 4-celled; ovules 1 to many. *Gelsemium, Logania, Spigelia, Strychnos.* (Pf. IV, 2, 19.)

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Family 175. **Gentianaceae.** Gentians. Mostly herbs with usually opposite undivided leaves; corolla-lobes contorted, valvate, or induplicate; stamens 4 to 5 (or indefinite); ovary usually 1-celled; ovules many. *Erythraea, Gentiana, Eustoma, Menyanthes.* (Pf. IV, 2, 50.)

Family 176. **Apocynaceae.** Dogbanes. Milky-juiced trees, shrubs, and herbs, with opposite, simple leaves; corolla-lobes contorted or valvate; stamens 5, with granular pollen; ovary 2-celled or the carpels separating; ovules many. *Vinca, Apocynum, Nerium.* (Pf. IV, 2, 109.)

Family 177. **Asclepiadaceae.** Milkweeds. Milky-juiced herbs and shrubs, with opposite (or alternate) leaves; corolla-lobes contorted; stamens 5, with agglutinated pollen; ovary of two separated carpels; ovules many. *Asclepias, Enslenia, Ceropegia, Stapelia, Hoya.* (Pf. IV, 2, 189.)

Order SCROPHULARIALES. Corolla mostly zygomorphic (irregular or oblique); stamens fewer than the corolla-lobes, usually 4 or 2; ovules numerous; fruit mostly capsular.

Family 178. **Scrophulariaceae.** Snapdragons. Herbs (or shrubs and small trees) with alternate, opposite, or whorled leaves; ovary 2-celled with an axile placenta; seeds with endosperm. *Verbascum, Linaria, Antirrhinum, Maurandia, Collinsia, Scrophularia, Mimulus, Veronica, Digitalis, Gerardia, Castilleia, Pedicularis.* (Pf. IV, 3b, 39.)

Family 179. **Bignoniaceae.** Catalpas. Trees, shrubs (and herbs) with opposite or whorled leaves; ovary 1- or 2-celled with parietal or axile placentae; seeds numerous without endosperm. *Bignonia, Catalpa, Tecoma.* (Pf. IV, 3b, 189.)

Family 180. **Pedaliaceae.** Herbs with mostly opposite leaves; ovary 1-, 2-, or 4-celled with axile placentae; seeds 1 to many, with but little endosperm. *Pedalium, Sesamum.* (Pf. IV, 3b, 253.)

Family 181. **Martyniaceae.** Herbs with mostly opposite leaves, and perfect, irregular flowers; ovary with parietal placentae. *Martynia.* (Pf. IV, 3b, 265.)

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Family 182. **Orobanchaceae.** Broom-rapes. Leafless parasitic herbs; ovary 1-celled; placentae parietal; ovules minute, numerous. *Orobanche, Thalesia, Conopholis.* (Pf. IV, 3b, 123.)

Family 183. **Gesneraceae.** Tropical and subtropical herbs, shrubs (and trees) with usually opposite leaves; ovary 1-celled, with 2 parietal placentae; seeds numerous; endosperm scanty or 0. *Streptocarpus, Gesnera, Gloxinia.* (Pf. IV, 3b, 133.)

Family 184. **Columelliaceae.** South America trees and shrubs with opposite, evergreen leaves; ovary 2-celled, with an axile placenta. *Columellia.* (Pf. IV, 3b, 186.)

Family 185. **Lentibulariaceae.** Bladderworts. Aquatic or marsh herbs with radical or alternate leaves; ovary 1-celled, with a globose basilar placenta. *Pinguicula, Utricularia.* (Pf. IV, 3b, 108.)

Family 186. **Globulariaceae.** Shrubs and undershrubs or evergreen herbs, with alternate leaves, and a terminal capitate cluster of small flowers; ovary 1-celled, with a single ovule. *Globularia.* (Pf. IV, 3b, 270.)

Family 187. **Acanthaceae.** Herbs (shrubs and trees) with opposite leaves; ovary 2-celled; placentae axile; seeds 2 to many without endosperm. *Thunbergia, Ruellia, Acanthus, Justicia.* (Pf. IV, 3b, 274.)

Order LAMIALES. Corolla mostly zygomorphic (irregular or oblique); stamens fewer than the corolla-lobes, usually 4 or 2; ovules mostly solitary; fruit indehiscent.

Family 188. **Myoporaceae.** Shrubs and trees, with usually alternate leaves; flowers axillary. *Myoporum.* (Pf. IV, 3b, 354.)

Family 189. **Phrymaceae.** Erect, perennial herbs, with opposite leaves, and small spicate flowers; calyx and corolla cylindrical, 2-lipped; stamens 4; ovary 1-celled, 1-ovuled. *Phryma.* (Pf. IV, 3b, 361.)

Family 190. **Verbenaceae.** Verbenas. Herbs, shrubs, and trees, with usually opposite leaves; stigma usually undivided. *Verbena, Lantana, Lippia, Tectona, Vitex.* (Pf. IV, 3a, 132.)

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Family 191. **Lamiaceae.** Mints. Mostly aromatic . herbs, shrubs (and trees) with opposite or whorled leaves; stigma usually bifid. *Lavendula, Nepeta, Stachys, Salvia, Thymus, Mentha, Coleus.* (Pf. IV, 3a, 183.)

Sub-Class DICOTYLEDONEAE–CALYCIFLORAE. "Cup Flowers." Axis of the flower normally expanded into a disk or cup, bearing on its margin the perianth and stamens (or the latter may be attached to the corolla.)

Super-Order CALYCIFLORAE-APOPETALAE. Petals separate. Carpels many to few, separate to united, superior to inferior. This super-order originates near the beginning of the Axiflorae, and indeed the orders Ranales and Rosales are unquestionably closely related.

Order ROSALES. Flowers usually perfect, actinomorphic to zygomorphic (regular to irregular); carpels separate or more or less united, sometimes united with the axis-cup; styles usually distinct.

Family 192. **Rosaceae.** Roses. Herbs, shrubs, and trees with mostly alternate leaves; stamens usually indefinite; carpels 1 to many, free (but they may be enclosed in the deep cup); ovules usually 2, anatropous. *Potentilla, Fragaria, Spiraea, Rosa.* (Sp. about 2700.) (Pf. III, 3, 1.)

Family 193. **Malaceae.** Apples. Shrubs and trees with alternate leaves; stamens usually many; carpels few. More or less united, and adnate to the axis-cup, so as to be "inferior." *Sorbus, Pirus, Malus, Crataegus.* (Pf. III, 3, 1 and 18.)

Family 194. **Prunaceae.** Plums. Shrubs and trees with alternate leaves; stamens many, on the cup margin; carpel one, in the bottom of the deep cup, becoming a drupe. *Prunus, Amygdalus.* (Sp. 150.) (Pf. III, 3, 1 and 50.)

Family 195. **Crossosomataceae.** Southwest North American shrubs, with small leaves and a bitter bark; sepals and petals 5 each; stamens 20 or more; carpels 3–5. *Crossosoma.* (Pf. Nach. 185.)

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Family 196. **Connaraceae.** Trees and shrubs with alternate compound leaves; stamens definite; pistils 1 to 5, free; ovules 2, ascending, orthotropous. *Connarus, Cnestis.* (Pf. III, 3, 61.)

Family 197. **Mimosaceae.** The Mimosas. Trees, shrubs, and herbs, with alternate mostly compound leaves; flowers actinomorphic; stamens 10 or more, usually separate; fruit a legume; seeds without endosperm. *Acacia, Mimosa.* (Sp. 1483.) (Pf. III, 3, 70 and 99.)

Family 198. **Cassiaceae.** The Sennas. Trees, shrubs, and herbs, with alternate mostly compound leaves; flowers zygomorphic; stamens 10 or less, usually separate; fruit a legume; seeds with or without endosperm. *Cassia, Caesalpinia, Gleditsia, Gymnocladus.* (Sp. 1172.) (Pf. III, 3, 70 and 125.)

Family 199. **Fabaceae.** The Beans. Mostly herbs, but with many shrubs and trees, with alternate, mostly compound leaves; flowers zygomorphic; stamens 10 or less usually more or less united; fruit a legume; seeds usually without endosperm. *Lupinus, Medicago, Trifolium, Robinia, Astragalus, Arachis, Vicia, Pisum, Phaseolus.* (Sp. 6948.) (Pf. III, 3, 70 and 184.)

Family 200. **Saxifragaceae.** Saxifrages. Herbs with alternate or opposite leaves, regular 4- or 5-merous flowers, with 8 or 10 stamens, and usually 2 more or less united carpels which are superior. *Saxifraga, Heuchera, Mitella.* (Pf. III, 2a, 41.)

Family 201. **Hydrangeaceae.** Hydrangeas. Shrubs and trees with mostly opposite leaves, and regular 4- or 5-merous flowers, with few (8) to many (40) stamens, and 2 to 5 united carpels, which are more or less overgrown by the axis-cup. *Philadelphus, Hydrangea.* (Pf. III, 2a, 41.)

Family 202. **Grossulariaceae.** Gooseberries. Shrubs with alternate leaves, regular 4- or 5-merous flowers, usually 5 stamens, and 2 to several united carpels which are wholly overgrown by the fleshy cup (ovary inferior). *Ribes.* (Pf. III, 2a, 41.)

Family 203. **Crassulaceae.** Stonecrops. Mostly fleshy herbs, with opposite or alternate leaves; stamens definite; pistils several,

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free or little united, ovules indefinite. *Sedum, Cotyledon, Crassula, Penthorum.* (Pf. III, 2a, 23.)

Family 204. **Droseraceae.** Sundews. Gland-bearing marsh herbs; stamens mostly definite; pistil syncarpous, 1- to 3-celled, superior; ovules many, on basal, axile, or parietal placentae. *Drosera, Dionaea.* (Pf. III, 2, 261.)

Family 205. **Cephalotaceae.** Pitcher Plants. Perennial Australian herbs with a whorl of pipe-shaped radical leaves, and an erect, spicate flowering stem. *Cephalotus.* (Pf. III, 2a, 39.)

Family 206. **Pittosporaceae.** Trees and shrubs of the southern hemisphere, with alternate leaves; sepals, petals, and stamens 5 each. *Pittosporum, Marianthus.* (Pf. III, 2a, 106.)

Family 207. **Brunelliaceae.** South American trees, with opposite or whorled leaves; sepals and petals 4 to 5 or 7 each; stamens twice as many; carpels usually 4 to 5, free. *Brunellia.* (Pf. Nach. 182.)

Family 208. **Cunoniaceae.** Shrubs and trees, mostly of the southern hemisphere, with opposite or whorled leaves; sepals and petals 4 to 6 each; stamens twice as many; carpels 2 to 5, united. *Belangera, Cunonia.* (Pf. III, 2a, 94.)

Family 209. **Myrothamnaceae.** Small, rigid, balsamic South African and Madagascar shrubs, with opposite leaves, and dioecious, achlamydeous flowers. *Myrothamnus.* (Pf. III, 2a, 103.)

Family 210. **Bruniaceae.** Heath-like shrubs of the southern hemisphere, with small leaves; stamens definite; pistil mostly 3-celled, inferior or superior; ovules 1 to many, pendulous. *Brunia.* (Pf. III, 2a, 131.)

Family 211. **Hamamelidaceae.** Witch Hazels. Shrubs and trees with mostly alternate leaves; stamens few or many; pistil bicarpellary, its ovary inferior; ovules solitary or many. *Liquidambar, Altingia, Hamamelis.* (Pf. III, 2a, 115.)

Family 212. **Casuarinaceae.** Beefwood Trees. Shrubs and trees with striate stems bearing whorls of reduced scale-like leaves; disk 0; petals 0; pistil 1-celled; ovules 2, lateral, half ana-

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tropous; endosperm 0. *Casuarina.* (Pf. III, 1, 16.) This family which has puzzled botanists from the first is doubtfully placed here, on the theory that these plants are leafless relatives of the *Hamamelidaceae.*

Family 213. **Eucommiaceae.** Chinese trees, with alternate leaves, and achlamydeous flowers; stamens 6–10; pistil one-celled, two-seeded. *Eucommia.* (Pf. Nach. 159.)

Family 214. **Platanaceae.** Plane Trees. Trees with alternate leaves, and monoecious flowers in globular heads; perianth 0; pistils 1-celled, 1-ovuled; endosperm minute. *Platanus.* (Pf. III, 2a, 137.)

Order MYRTALES. Flowers actinomorphic (regular) or nearly so, usually perfect; pistil of united carpels, usually inferior; placentae axile or apical (rarely basal); style 1 (rarely several); leaves simple, usually entire.

Family 215. **Lythraceae.** Herbs, shrubs, and trees usually with opposite leaves and 4-angled branches; stamens definite or indefinite; pistil 2- to 6-celled, free; ovules numerous, on axile placentae. *Lythrum, Cuphea, Lagerstroemia.* (Pf. III, 7, 1.)

Family 216. **Sonneratiaceae.** Tropical trees with opposite leaves; ovary sunken in the calyx-cup, many celled; stamens many. *Sonneratia.* (Pf. III, 7, 16.)

Family 217. **Punicaceae.** Pomegranates. Small tropical and subtropical trees with opposite leaves; ovary inferior, 4- to 15-celled, producing a pulpy, many-seeded fruit. *Punica.* (Pf. III, 7, 22.)

Family 218. **Lecythidaceae.** Tropical trees, with alternate opposite or whorled leaves; ovary inferior, 2–6-celled; stamens very many. *Barringtonia, Napoleona, Lecythis, Bertholletia.* (Pf. III, 7, 26.)

Family 219. **Melastomaceae.** Mostly tropical herbs, shrubs, and trees with generally opposite leaves; stamens usually double the number of petals; pistil 2- to many-celled, free or adherent to the calyx-tube; ovules minute, numerous, on axile or parietal

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placentae. *Melastoma, Osbeckia, Rhexia, Tamonea.* (Pf. III, 7, 130.)

Family 220. **Myrtaceae.** Myrtles. Trees and shrubs with opposite or alternate leaves; stamens indefinite; pistil 2- to many-celled, inferior; ovules 2 to many; placentae basal or axile. *Myrtus, Pimenta, Eugenia, Jambosa, Eucalyptus, Malaleuca.* (Sp. 2556.) (Pf. III, 7, 57.)

Family 221. **Combretaceae.** Trees and shrubs with opposite or alternate leaves; stamens usually definite; pistil 1-celled, inferior; ovules 2 to 6 or solitary, pendulous. *Terminialia, Combretum, Laguncularia.* (Pf. III, 7, 106.)

Family 222. **Rhizophoraceae.** Mangroves. Trees and shrubs with mostly opposite leaves; stamens 2 to 4 times the number of petals; pistil 2- to 6-celled, usually inferior; ovules 2, pendulous. *Rhizophora, Carallia.* (Pf. III, 7, 42.)

Family 223. **Oenotheraceae.** Evening Primroses. Herbs (shrubs and trees) with opposite or alternate leaves; stamens 1 to 8, rarely more; pistil usually 4-celled, inferior; ovules 1 to many on axile placentae. *Epilobium, Onagra, Oenothera, Meriolix, Gaura, Fuchsia, Circaea.* (Pf. III, 7, 199.)

Family 224. **Halorrhagidaceae.** Aquatic or terrestrial herbs with mostly alternate leaves; pistil 1- to 4-celled, inferior; ovules solitary, pendulous. *Halorrhagis, Myriophyllum.* (Pf. III, 7, 226.)

Family 225. **Hippuridaceae.** Aquatic perennial erect herbs, with whorled leaves, and small, reduced, axillary apetalous flowers. *Hippuris.* (Pf. III, 7, 237.)

Family 226. **Cynomoriaceae.** Parasitic rhizomatous fleshy plants with spicate, small, apetalous flowers. *Cynomorium.* (Pf. III, 1, 250.)

Family 227. **Aristolochiaceae.** Dutchman's Pipes. Herbaceous or shrubby plants, with alternate leaves; petals absent; stamens 6, rarely more; pistil 4- or 6-celled, inferior; ovules numerous, on axile (or protruding parietal) placentae. *Asarum, Aristolochia.* (Pf. III, 1, 264.)

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Family 228. **Rafflesiaceae.** Fleshy, parasitic herbs, leafless or nearly so; petals 4 or 0; stamens 8 to many; pistil 1-celled or imperfectly many-celled, inferior; ovules minute, very numerous, on parietal or pendulous, folded placentae. *Rafflesia, Cytinus.* (Pf. III, 1, 274.)

Family 229. **Hydnoraceae.** Parasitic, succulent, tropical herbs; perianth single, valvate; stamens numerous; seeds very numerous. *Hydnora.* (Pf. III, 1, 282.)

Order CACTALES. Flowers actinomorphic (regular) or nearly so, perfect; pistil syncarpous, 1-celled, with parietal placentae, its ovary inferior; style divided at the apex; endosperm present or 0; embryo curved; fleshy-stemmed, mostly leafless, plants.

Family 230. **Cactaceae.** Cactuses. With the characters of the order. *Peireskia, Opuntia, Cereus, Melocactus, Cactus, Rhipsalis.* (Pf. III, 6a, 156.)

Order LOASALES. Flowers usually actinomorphic (regular), perfect or diclinous; pistil syncarpous, 1-celled, its ovary usually inferior; placentae parietal; styles free or connate; leaves simple, entire, lobed or dissected.

Family 231. **Loasaceae.** Star Flowers. Herbs with opposite or alternate leaves; flowers perfect; sepals and petals dissimilar; stamens indefinite; ovary inferior; endosperm fleshy or 0. *Mentzelia, Loasa.* (Pf. III, 6a, 100.)

Family 232. **Cucurbitaceae.** Melons. Mostly climbing or prostrate herbs and undershrubs, with alternate leaves; flowers diclinous; stamens definite (usually 3); ovary inferior; endosperm 0. *Melothria, Momordica, Luffa, Citrullus, Cucumis, Lagenaria, Cucurbita.* (Pf. IV, 5, 1.)

Family 233. **Begoniaceae.** Begonias. Mostly herbs with alternate leaves; flowers diclinous; stamens indefinite; ovary inferior, usually 3-angular; endosperm little or 0. *Begonia.* (Pf. III, 6a, 121.)

Family 234. **Datiscaceae.** Herbs or trees, with alternate leaves; flowers mostly diclinous; stamens 4 to many; ovary in-

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ferior, usually gaping at the top; endosperm scanty. *Datisca.* (Pf. III, 6a, 150.)

Family 235. **Ancistrocladaceae.** Climbing plants of tropical Asia, with 5 petals, 5–10 stamens and a 1-celled, many-seeded inferior ovary. *Ancistrocladus.* (Pf. III, 6, 274.)

Order CELASTRALES. Receptacle developing a glandular, annular or turgid disk, which is sometimes adnate to the calyx-tube or the pistil (sometimes the disk is rudimentary or wanting); pistil 1- to many-celled (rarely apocarpous); ovules 1 to 3, pendulous or erect; endosperm present or 0. Flowers actinomorphic.

Family 236. **Rhamnaceae.** Buckthorns. Trees and shrubs, with usually alternate, simple leaves; disk adnate to the calyx; petals present; pistil 2- to 4-celled; ovules 1 or 2, erect; endosperm fleshy. *Zizyphus, Rhamnus, Ceanothus, Phylica, Colletia.* (Pf. III, 5, 393.)

Family 237. **Vitaceae.** Grapes. Climbing shrubs and trees, with alternate, simple or compound leaves; disk adnate to the calyx; petals coherent, valvate; pistil 2-celled, 2-ovuled (or 3–6-celled, 1-ovuled); endosperm often ruminate. *Vitis, Parthenocissus, Cissus.* (Pf. III, 5, 427.)

Family 238. **Celastraceae.** Bittersweets. Shrubs and trees, with usually alternate, simple leaves; disk fleshy; petals present; pistil 2- to 5-celled; ovules usually 2, erect or pendulous; endosperm fleshy. *Euonymus, Celastrus, Cassine.* (Pf. III, 5, 189.)

Family 239. **Buxaceae.** Boxes. Evergreen shrubs and trees, with alternate or opposite leaves, and usually monoecious, small, apetalous flowers; stamens 4; pistil tricarpellary. *Pachysandra, Buxus.* (Pf. III, 5, 130.)

Family 240. **Aquifoliaceae.** Hollies. Trees and shrubs, with alternate or opposite, simple leaves; disk obsolete; pistil 3- to many-celled; ovule 1, pendulous; endosperm fleshy. *Ilex, Nemopanthes.* (Pf. III, 5, 183.)

Family 241. **Cyrillaceae.** Evergreen shrubs or small trees, with alternate leaves; sepals 5; petals 5; stamens 10; carpels 2–5, united superior. *Cyrilla.* (Pf. III, 5, 179.)

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Family 242. **Pentaphylaceae.** Chinese trees, with alternate, leathery leaves; sepals 5; petals 5; stamens 5; pistil superior, of 5 carpels. *Pentaphylax.* (Pf. Nach. 214.)

Family 243. **Corynocarpaceae.** New Zealand trees, with alternate, fleshy, leathery leaves; sepals 3–5; petals 3–6; stamens 5; pistil superior, of 1 or 2 carpels. *Corynocarpus.* (Pf. Nach. 215.)

Family 244. **Hippocrateaceae.** Tropical trailing and climbing woody plants; sepals 5; petals 5; stamens 3 or 2 or 5; pistil of 3 carpels, sessile on the disk. *Hippocratea, Salacia.* (Pf. III, 5, 222.)

Family 245. **Stackhousiaceae.** Australian herbs with simple alternate leaves; disk thin, on the base of the calyx; petals present; ovary 2- to 5-celled; ovule 1, erect; endosperm fleshy. *Stackhousia.* (Pf. III, 5, 231.)

Family 246. **Staphyleaceae.** Bladder-nuts. Shrubs and trees, with opposite, compound leaves; sepals 5; petals 5; stamens 5; pistil of 3 carpels, sessile on the disk. *Staphylea, Turpinia.* (Pf. III, 5, 258.)

Family 247. **Geissolomataceae.** South African evergreen shrubs, with closely crowded, sessile leaves; sepals 4; petals none; stamens 8; pistil superior, of 4 carpels. *Geissoloma.* (Pf. III, 6a, 205.)

Family 248. **Penaeaceae.** South African evergreen heath-like shrubs, with small, opposite leaves; disk 0; petals 0; pistil 4-celled; ovules 2, erect; endosperm 0. *Penaea.* (Pf. III, 6a, 208.)

Family 249. **Oliniaceae.** African shrubs and trees, with thick, leathery, opposite leaves; sepals 4–5, large; petals 4–5, very small; stamens 4–5; pistil inferior of 3–5 carpels. *Olinia.* (Pf. III, 6a, 213.)

Family 250. **Thymelaeaceae.** Shrubs, small trees (and herbs), with scattered or opposite, usually coriaceous, simple leaves; disk 0; petals 0; pistil 1-celled; ovule 1, pendulous; endosperm fleshy, copious, sparse, or 0. *Gnidia, Thymelaea, Daphne, Dirca.* (Pf. III, 6a, 215.)

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Family 251. **Hernandiaceae.** Tropical trees and shrubs, with alternate leaves; flowers monoecious; sepals 4–10; petals none; stamens 3; pistil 1-celled, included in the calyx-tube. *Hernandia.* (Pf. III, 2, 126.)

Family 252. **Elaeagnaceae.** Oleasters. White- or brown-scurfy trees and shrubs, with alternate or opposite, simple leaves; disk lining the perianth-tube; petals 0; pistil 1-celled; ovule 1, ascending; endosperm 0 or scanty. *Elaeagnus, Lepargyraea.* (Pf. III, 6a, 246.)

Family 253. **Myzodendraceae.** South American parasitic shrubs, with alternate, rather small leaves; flowers dioecious, apetalous; stamens 2–3; pistil 1-celled. *Myzodendron.* (Pf. III, 1, 198.)

Family 254. **Santalaceae.** Sandalwoods. Parasitic herbs, shrubs, and trees, with alternate or opposite, simple leaves; disk epigynous; petals 0; pistil 1-celled; ovules 2 to 5, pendulous; endosperm present. *Santalum, Comandra, Thesium.* (Pf. III, 1, 202.)

Family 255. **Opiliaceae.** Small trees and shrubs of tropical climates, with alternate leaves, and perfect flowers; sepals, petals and stamens 4–5 each; pistil superior. *Opilia.* (Pf. Nach. 142.)

Family 256. **Grubbiaceae.** South African shrubs with opposite or whorled leaves, and epigynous, apetalous flowers. *Grubbia.* (Pf. III, 1, 282.)

Family 257. **Olacaceae.** Trees and shrubs, mostly tropical, with usually alternate, simple leaves; disk free or adnate to the calyx; petals present; pistil 1- to 3-celled; ovules 2 to 3, pendulous; endosperm fleshy. *Olax.* (Pf. III, 1, 231.)

Family 258. **Loranthaceae.** Mistletoes. Parasitic herbs or shrubs, with opposite or alternate leaves, often reduced to bracts; disk epigynous; petals 0; pistil 1-celled, inferior; ovules 1, erect; endosperm present. *Loranthus, Viscum, Phoradendron, Razoumowskia.* (Pf. III, 1, 156.)

Family 259. **Balanophoraceae.** Parasitic, leafless herbs, all

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tropical, monoecious or dioecious; disk 0; petals 0; pistil 1-celled, inferior; ovule 1, erect; endosperm present. *Balanophora.* (Pf. III, 1, 243.)

Order SAPINDALES. Flowers mostly actinomorphic; disk tumid, adnate to the calyx, lining its tube or rudimentary, or entirely wanting; pistil 1- to several-celled; ovules 1 to 2, erect, ascending, or pendulous; endosperm mostly 0.

Family 260. **Sapindaceae.** Soapberries. Trees and shrubs, mostly tropical, with alternate (or opposite), mostly compound leaves; disk present or 0; petals 3 to 5 or 0; pistil 1- to 4-celled; ovules 1 or 2, ascending; endosperm usually 0. *Paullinia, Sapindus, Talisia, Litchi, Koelreuteria, Dodonaea.* (Pf. III, 5, 277.)

Family 261. **Hippocastanaceae.** Horsechestnuts. Trees and shrubs, with opposite, palmately compound leaves; flowers irregular; sepals 5; petals 5; stamens 8–5; pistil superior, tricarpellary. *Aesculus.* (Pf. III, 5, 273.)

Family 262. **Aceraceae.** Maples. Trees and shrubs, with opposite, simple or compound leaves; sepals mostly 5; petals 5 or none; pistil superior, bicarpellary, winged in fruit. *Acer.* (Pf. III, 5, 258.)

Family 263. **Sabiaceae.** Trees and shrubs of the tropics, with alternate, simple or compound leaves; disk small; petals present; pistil 2- to 3-celled; ovules 1 or 2, horizontal or pendulous; endosperm 0. *Sabia, Meliosma.* (Pf. III, 5, 367.)

Family 264. **Icacinaceae.** Tropical trees and shrubs, with alternate or opposite leaves; sepals 5–4; petals 5–4; stamens 5–4; pistil superior, of 5 or 3 carpels. *Icacina.* (Pf. III, 5, 233.)

Family 265. **Melianthaceae.** Tropical trees and shrubs, with alternate leaves, and pentamerous, zygomorphic flowers. *Melianthus.* (Pf. III, 5, 374.)

Family 266. **Empetraceae.** Heath-like shrubs, with small leaves; flowers small, mostly dioecious, solitary or in heads; petals present; stamens 2–3, 2- to 3-celled; pistil 2- to many-celled; seeds solitary, endospermous. *Corema, Empetrum.* (Pf. III, 5, 123.)

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Family 267. **Coriariaceae.** Shrubs with opposite, sessile leaves; 5 sepals; 5 petals; 10 stamens; 5 to 10 carpels, slightly united. *Coriaria.* (Pf. III, 5, 128.)

Family 268. **Anacardiaceae.** Sumachs. Trees and shrubs, mostly tropical, with alternate, usually compound leaves; disk usually annular; petals 3 to 7 or 0; pistil 1- to 5-celled; ovules solitary, pendulous (or erect); endosperm scanty or 0. *Mangifera, Anacardium, Schinus, Cotinus, Metopium, Rhus.* (Pf. III, 5, 138.)

Family 269. **Juglandaceae.** Walnuts. Trees and shrubs, with alternate, compound leaves; disk forming a capsule; pistil 1-celled, inferior; ovule 1, erect, orthotropous; endosperm 0. *Engelhardtia, Juglans, Hicoria.* (Pf. III, 1, 19.)

Family 270. **Betulaceae.** Birches. Trees and shrubs, with alternate, simple leaves, and monoecious or dioecious flowers, which are in aments; petals none; calyx small or none; stamens 2–10; pistil 1–2-celled. *Carpinus, Ostrya, Corylus, Betula, Alnus.* (Pf. III, 1, 38.)

Family 271. **Fagaceae.** Beeches. Trees and shrubs, with alternate, simple leaves; disk 0; petals 0; pistil 2- to 6-celled, inferior; ovules 2, erect or pendulous; endosperm 0. *Fagus, Castanea, Pasania, Quercus.* (Pf. III, 1, 47.)

Family 272. **Myricaceae.** Bayberries. Shrubs and trees, with alternate, simple leaves; disk 0; petals 0; pistil free, 1-celled; ovule 1, erect, orthotropous; endosperm 0. *Myrica.* (Pf. III, 1, 26.)

Family 273. **Julianaceae.** Dioecious, tropical trees, with leaves clustered at the ends of the twigs; flowers small, apetalous, dioecious; stamens 4–8; pistil of 3–5 carpels. *Juliana.* (Pf. Nach. 335, and Syllabus 111.) This family is given place here very doubtfully.

Family 274. **Proteaceae.** Shrubs, trees (and herbs) of the southern hemisphere, with scattered, simple, usually coriaceous leaves; disk 0; petals 0; pistil 1-celled; ovule 1, erect or pendulous; endosperm little or none. *Protea, Leucadendron, Grevillea,*

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Hakea, Banksia. (Pf. III, 1, 118.) This puzzling family is given place here very doubtfully.

Order UMBELLALES. Flowers actinomorphic (regular), usually perfect; stamens usually definite; pistil syncarpous, 1- to many-celled, its ovary inferior; ovules solitary, pendulous; styles free or united at the base; endosperm copious; embryo usually minute.

Family 275. **Araliaceae.** Aralias. Trees, shrubs (and herbs), mostly tropical, with alternate leaves; flowers in umbels, heads, or panicles; ovary 2- to 15-celled; fruit a berry with a fleshy or dry exocarp. *Hedera, Aralia, Panax.* (Pf. III, 8, 1.)

Family 276. **Apiaceae.** Parsleys. Herbs (shrubs and trees), with alternate leaves; flowers small, mostly umbellate; ovary 2-celled; fruit splitting into two dry indehiscent mericarps. *Hydrocotyle, Sanicula, Eryngium, Coriandrum, Conium, Apium, Cicuta, Carum, Foeniculum, Angelica, Ferula, Heracleum, Daucus.* (Sp. 2177.) (Pf. III, 8, 63.)

Family 277. **Cornaceae.** Cornels. Shrubs and trees (rarely herbs), with usually opposite leaves; flowers umbellate, capitate, or corymbose; ovary 2- to 4-celled, fruit drupaceous. *Garrya, Nyssa, Cornus, Aucuba.* (Pf. III, 8, 250.)

Super-Order CALYCIFLORAE-GAMOPETALAE. Petals united. Carpels few, united, inferior; stamens usually as many as the corolla-lobes, mostly attached to the corolla.

Order RUBIALES. Flowers actinomorphic to zygomorphic (regular or irregular); stamens attached to the corolla; calyx small; ovary 2- to 8-celled; ovules 2 to many.

Family 278. **Rubiaceae.** Madders. Trees, shrubs and herbs, mostly tropical, with opposite or whorled leaves; flowers usually regular, with valvate, contorted, or imbricate corolla-lobes; style simple bifid, or multifid; fruit a capsule, berry, or drupe. *Houstonia, Cinchona Bouvardia, Cephalanthus, Randia, Coffea, Mitchella, Galium, Rubia.* (Pf. IV, 4, 1.)

Family 279. **Caprifoliaceae.** Honeysuckles. Flowers usually irregular, with imbricate corolla-lobes; style usually with a capi-

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tate undivided stigma; fruit a berry. *Sambucus, Viburnum, Linnaea, Lonicera.* (Pf. IV, 4, 156.)

Family 280. **Adoxaceae.** Moschatels. Slender herbs with scaly rootstocks, bearing ternately compound leaves; flowers small, greenish, in heads; stamens 10; fruit drupaceous. *Adoxa.* (Pf. IV, 4, 170.)

Family 281. **Valerianaceae.** Valerians. Herbs (and shrubs) with opposite leaves; flowers cymose, corymbose, or solitary; anthers free; ovules pendulous. *Valerianella, Fedia, Valeriana.* (Pf. IV, 4, 172.)

Family 282. **Dipsaceae.** Teasels. Herbs (and shrubs) with opposite or whorled leaves; flowers in involucrate heads; anthers free; ovule pendulous. *Cephalaria, Dipsacus, Scabiosa.* (Pf. IV, 4, 182.)

Order CAMPANULALES. Flowers actinomorphic to zygomorphic (regular or irregular); stamens mostly free from the corolla, their anthers free or connate; ovary 1- to several-celled; ovules 1–8.

Family 283. **Campanulaceae.** Bellflowers. Mostly milky-juiced herbs (shrubs and small trees), with alternate (or opposite) leaves; flowers regular or irregular; stamens usually 5, free from the style. *Campanula, Lobelia.* (Pf. IV, 5, 40.)

Family 284. **Goodeniaceae.** Mostly Australian herbs and shrubs, with alternate (or opposite) leaves; flowers usually irregular; stamens 5, free from the style. *Goodenia, Scaevola, Brunonia.* (Pf. IV, 5, 70.)

Family 285. **Stylidiaceae.** Australian herbs, with tufted, radical, or scattered and sometimes crowded stem-leaves; flowers usually irregular; stamens 2, connate with the style. *Stylidium, Levenhookia.* (Pf. IV, 5, 79.)

Family 286. **Calyceraceae.** South American herbs, with alternate leaves; flowers in involucrate heads; anthers connate; ovule pendulous. *Boopis, Calycera.* (Pf. IV, 5, 84.)

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Order ASTERALES. Composites. Flowers actinomorphic or zygomorphic, collected into involucrate heads; calyx small, and often forming a "pappus"; stamens 5, epipetalous, mostly with their anthers connate; carpels 2, united, inferior, with one style which is 2-branched above; ovule one, erect, anatropous. An immense order (commonly regarded as a family) of more than 14,300 species, which are usually distributed among fourteen tribes, all of which are here raised to families. In the following arrangement the *Helianthaceae* are regarded as the lowest, from which the two principal phyletic lines have arisen, culminating on the one hand in the *Eupatoriaceae*, and on the other in the *Lactucaceae*. (Pf. IV, 5, 87.)

Family 287. **Helianthaceae.** Sunflowers. Calyx not capillary; receptacle chaffy; usually with ray flowers; mostly large and coarse plants. *Helianthus, Zinnia, Rudbeckia, Silphium.* (Sp. 1364.) (Pf. IV, 5, 210.)

Family 288. **Ambrosiaceae.** Ragweed. Calyx not capillary; receptacle chaffy; without ray flowers; mostly large and coarse plants, which are diclinous. *Ambrosia, Xanthium.* (Sp. 74.) (Pf. IV, 5, 220.)

Family 289. **Heleniaceae.** False Sunflowers. Calyx not capillary; receptacle usually naked; with or without rays; anthers tailless; medium sized plants. *Helenium, Gaillardia.* (Sp. 449.) (Pf. IV, 5, 251.)

Family 290. **Arctotidaceae.** Gazanias. Calyx not capillary; receptacle naked; anthers tailless. South African plants. *Gazania, Arctotis.* (Sp. 278.) (Pf. IV, 5, 307.)

Family 291. **Calendulaceae.** Marigolds. Calyx not capillary; receptacle naked; anthers tailed. Old world plants, mostly tropical. *Calendula.* (Sp. 125.) (Pf. IV, 5, 303.)

Family 292. **Inulaceae.** Everlastings. Calyx from bracteose to capillary; receptacle usually naked; anthers tailed; usually rayless; mostly low plants. *Inula, Antennaria, Gnaphalium, Helichrysum.* (Sp. 1580.) (Pf. IV, 5, 172.)

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Family 293. **Asteraceae.** Asters, Calyx from bracteose to capillary; receptacle naked; usually with rays. Medium-sized plants. *Aster, Solidago, Erigeron, Bellis.* (Sp. 1815.) (Pf. IV, 5, 142.)

Family 294. **Vernoniaceae.** Ironweeds. Calyx from bracteose to capillary; receptacle naked; without rays; style branches hispidulous. Medium-sized plants. *Vernonia.* (Sp. 788.) (Pf. IV, 5, 120.)

Family 295. **Eupatoriaceae.** Blazing Stars. Calyx from bracteose to capillary; receptacle naked; without rays; style branches papillose. Medium sized plants. *Lacinaria, Eupatorium.* (Sp. 944.) (Pf. IV, 5, 131.)

Family 296. **Anthemidaceae.** Camomiles. Calyx a short crown or wanting; receptacle chaffy or naked; usually with white ray flowers. Medium sized plants. *Anthemis, Chrysanthemum, Artemisia.* (Sp. 915.) (Pf. IV, 5, 267.)

Family 297. **Senecionidaceae.** Groundsels. Calyx capillary; receptacle naked; with or without rays. Medium sized to large plants. *Senecio, Arnica.* (Sp. 1982.) (Pf. IV, 5, 283.)

Family 298. **Carduaceae.** Thistles. Calyx mostly capillary; receptacle usually bristly (not chaffy); without rays. Mostly stout plants. *Carduus, Arctium, Cnicus.* (Sp. 1563.) (Pf. IV, 5, 312.)

Family 299. **Mutisiaceae.** Mutisias. Calyx mostly capillary; receptacle usually naked; flowers all two-lipped. Medium to large (even woody) plants, of tropical or warm regions. *Mutisia, Chaptalia.* (Sp. 550.) (Pf. IV, 5, 333.)

Family 300. **Lactucaceae.** Lettuces. Calyx mostly capillary; receptacle usually naked; flowers all strap-shaped. Small to medium sized plants, mostly with a milky juice. *Lactuca, Hieracium, Cichorium, Taraxacum.* (Sp. 1701.) (Pf. IV, 5, 350.)

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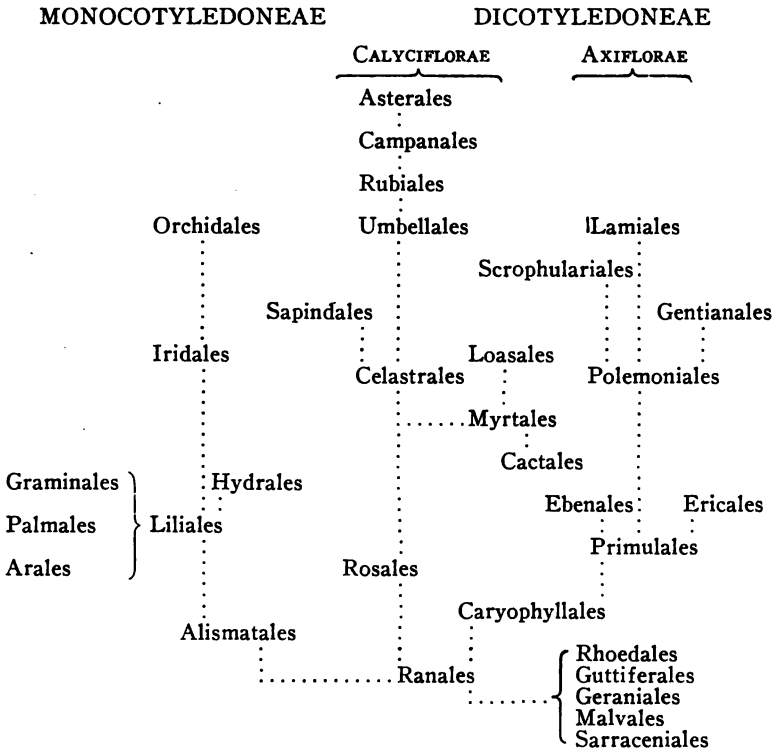
PHYLOGENETIC CHART

Showing the sequence and general relationship of the orders of Anthophyta, as given on the preceding pages.



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VOL. XIV APRIL 1914 NO. 2

UNIV. OF MICHIGAN
OCT 15 1914

UNIVERSITY STUDIES

PUBLISHED BY THE UNIVERSITY OF NEBRASKA

COMMITTEE OF PUBLICATION

C. E. BESSEY
F. M. FLING
P. H. FRYE
P. H. GRUMMANN
L. A. SHERMAN

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UNIVERSITY STUDIES

VOL. XIV *APRIL 1914* No. 2

I.—ON THE DISTRIBUTION AND COMPOSITION OF THE HUMUS OF THE LOESS SOILS OF THE TRANSITION REGION

BY MORRIS J. BLISH

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INTRODUCTION

The main object of this investigation has been to determine the distribution of the humus, to a depth of six feet, throughout the soils in representative virgin prairies of the so-called "transition region" of Nebraska. This region is the large area which extends westward from the Missouri River for a distance of over three hundred miles and which is covered, for the most part, with loess soil. This is, agriculturally, the most important soil in the state of Nebraska, and covers more than half the area of the state. The term "transition region" is employed to convey the idea of a gradual transition from a semi-arid condition, in the western part of the loess area, to a humid condition in the eastern part.

The term "humus" in this thesis is used to represent the humified organic matter in the soil, which is soluble in dilute alkalies. By the term "soil" is meant all soil through a depth of six feet, no line being drawn between surface-soil and subsoil.

The ratio of humus to total nitrogen was determined in the case of all soils of the first and second feet, while in all first-foot soils the nitrogen content of the humus was determined.

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Considerable work, also, was done during the course of this research, with a view to determining which are the most satisfactory and practical methods for the determination of the above-mentioned soil-constituents, under different conditions.

METHODS USED IN THE DETERMINATION OF HUMUS, NITROGEN AND HUMUS NITROGEN

Before beginning the investigation of the humus and humus nitrogen content of the soils of the Transition Region, taken at various depths, it was necessary to select methods which would give reliable results, as well as be reasonably economical of time. Before finally selecting a method for the gravimetric determination of humus, three methods were taken into consideration, viz., the "Official" method, which is the method of the Association of Official Agricultural Chemists of the United States, the method devised and used by Hilgard, and the method worked out by Rather, which is a modification of the "Official" method. Some surface soil from the Nebraska Experiment Station farm was taken as a standard and this was used in all cases. The "Official" method was discarded after a very brief trial, as it was found, as had been previously reported by others, to give results which are unreliable; it has been proven on numerous occasions that the results obtained by the "Official" method are very high, often several times as high as the results obtained by a "Hilgard" determination on the same soil, the latter method having been generally accepted as one which gives reasonably accurate and dependable results.

THE OFFICIAL METHOD

The "Official" method is carried on as follows: The soil sample, usually 10 grams, is placed in a filter and washed repeatedly with 1 per cent. hydrochloric acid until the washings show no precipitate when treated with ammonium hydrate and ammonium oxalate. This treatment extracts all lime and magnesia, which, if present, would prevent the humus going into solution in the later treatment with 4 per cent. ammonium hydroxid. The acid is then removed by repeated washings with distilled water, using

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silver nitrate or litmus paper to test the final washings. The soil is then transferred to a container with 500 c.c. of 4 per cent. ammonium hydroxid, and allowed to remain, with occasional shaking, for 24 hours. The suspended matter is allowed 12 hours more in which to settle, after which the supernatant liquid is drawn off and filtered, and an aliquot of this is evaporated to dryness in a tared platinum or quartz dish. The residue is then dried, either from 12 to 24 hours at 100° C. or from 2 to 4 hours at 110° C., and weighed. It is then ignited and weighed again. The difference in weight after ignition represents the weight of humus, while the difference between the first weight of the dish and the final weighing represents the so-called humus ash. The source of error in this method is the considerable amount of very finely divided clay which remains in suspension even after filtration. Accordingly when the residue obtained by the evaporation of the solution is ignited, this clay is dehydrated, and the difference in weight, caused by this loss of water, is recorded as humus, while the aluminum silicate remaining is weighed up as humus ash. Accordingly, it is obvious that as far as humus alone is concerned, this method is inaccurate and unreliable, and for this reason it is now commonly accepted as unreliable.

THE HILGARD METHOD

The Hilgard method is generally accepted as being more reliable than the "Official" method, although it is much longer and more tedious, often involving ten to twenty days. In this process the lime and magnesia are extracted in the same manner as in the "Official" method, but the extraction with the 4 per cent. ammonium hydroxide is carried on in a different manner. After the extraction of lime and magnesia, the soil is treated on the filter with 4 per cent. ammonium hydroxide, and this treatment is carried on either continuously or at intervals, until the liquid comes through practically colorless, on which the extraction of humus is assumed to be complete. This method not only frequently takes several days, but often a very large amount of humus solution is obtained and a correspondingly large amount of it must be used in the evaporation, which is then carried out as in the

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"Official" method. In most cases a slight amount of finely-divided clay is carried through the filter in this method, also, but the amount is so slight that the error caused by it is negligible, being less than the experimental error. As stated above, however, the method is accurate and its results may be relied upon when it has been performed correctly.

THE RATHER METHOD

The "Rather" method, however, was found to be more satisfactory than either of the other two, especially where a large number of gravimetric determinations are to be made, since it combines the speed of the "Official" method with the accuracy of the "Hilgard" method. The "Rather" method, as named after the man who proposed it, is a modification of the "Official" method, and was originally described in the *Journal of Industrial and Engineering Chemistry*[1] as follows:

"Prepare humus solution as described in the 'Official' method, and dissolve 0.65 gr. of ammonium carbonate in 130 c.c. of the solution. Allow to stand over night in a glass-stoppered cylinder to allow the clay to settle, and decant the clear supernatant liquid thru a dry filter into a dry flask. Evaporate 100 c.c. of the filtrate in a tared platinum dish, dry for three hours at 100°, weigh, ignite and weigh again. Record loss on ignition as humus." This method gave results concordant with those of the Hilgard method, and in view of this, together with the fact that it required much less time and attention, it was adopted for all the gravimetric determinations given below. The success of this method is due to the fact that the finely-divided clay is flocculated by the ammonum carbonate and held by the filter. Because of this flocculation of clay one might expect a lowering of the percentage of the so-called "humus ash," and this is actually the case, as this method gave a lower percentage of humus ash than did any other.

THE BLISH METHOD

Still another method suggested itself during the course of the work, and this may be referred to as the "Blish method." This

[1] *Jour. Ind. and Eng. Chem.*, Vol. 3, 1911, pp. 660–662.

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method also gives an exceedingly low ash content, practically the same as that of the Rather method. It is a combination of the Rather and Hilgard methods, the extraction of humus being carried on in the same way as in the Hilgard method, with the exception that the ammonum carbonate has already been added to the 4 per cent. ammonium hydroxid. This causes the very fine clay particles to flocculate on the filter, and consequently prevents their being carried through. The method has thus far been tried but very briefly, only three such determinations having been made. The results of these, however, indicate that the method should be as reliable as the Hilgard, with the added advantage of the low ash-content, caused by the absence of any clay particles. It is, however, just as tedious as the Hilgard method, and therefore does not seem as practical as the Rather method for most gravimetric work.

THE COLORIMETRIC METHOD

For soils which are very low in humus, however, the gravimetric determination is not entirely reliable and satisfactory. This is shown by the results obtained from gravimetric determinations on very light clay subsoil which should contain very little or no humus. Their extracts with 4 per cent. ammonia may have so little color that the eye can scarcely detect it, but a gravimetric determination will show .15 per cent. to .20 per cent. humus, whiie the humus ash will be practically the same as in soils of high humus content. It would seem from this that the 4 per cent. ammonia must dissolve a certain amount of material other than humus, from a soil. In surface soils, and soils of comparatively high humus content, the error introduced in this way is of slight consequence, but it is readily seen that in subsoils, and soils of low humus content, the percentage of error is considerably increased. Assuming that humus is the dark-colored organic material of the soil which is soluble in dilute alkalies, it was decided that for soils low in humus, a colorimetric determination would be of considerably more value than a gravimetric on the same soil, to say nothing of the great economy of time in the use of the colorimetric method. Colorimetric determinations were run on all of

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the samples, in order to have as complete a comparison as possible of the two methods. However, in reporting the humus content of the transition soils the gravimetric results are used in the case of samples from the first and the second feet, while for those from the third, fourth, fifth and sixth feet, the colorimetric results are employed. The colorimetric method involves simply a comparison of the color of the solution under investigation with the color of a known standard solution, the solutions being made up in the same manner as the solutions for the gravimetric determination. Alway and Pinckney,[2] who have previously worked on this method, describe it as follows: "A standard solution of convenient strength is prepared, and an aliquot portion, say 50 c.c., is placed in a Hehner or a Nessler cylinder. This is held beside a similar, but empty, cylinder vertically over a white plate in a good light. To the empty cylinder the humus solution under examination is slowly added until the same tint is observed in both. The results are most accurate when the standard is diluted to such an extent that the diluted solution is of about the same color as the solution under examination."

From the relative depth of the two solutions and the known strength of the standard, the strength of the unknown solution is readily computed by means of a simple proportion. In this particular work, however, the manipulation was made easier by the use of the "colorimeter," a contrivance in which the two cylinders containing the solutions may be moved up and down until the depth of color is the same in both solutions, the light being reflected up through a wooden chamber from a white glazed paper. The principle is essentially the same, however, in both cases.

COMPARISON OF THE SOIL COLORS

Comparisons of the color, of the soils, themselves, both in a wet and in a dry state, were also made. This was done by putting 25 gr. samples in shallow porcelain dishes, and attempting to arrange them in order of humus content. This could be done with a fair degree of success where only soils from the same local-

[2] Agri. Exp. Sta. Uni. of Nebr. 25th Annual Report, 1910.

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ity, and of the same general composition, were used; but when soils from different localities were used, attempts to arrange them in such a manner were not very satisfactory. For instance, when soils from Lincoln and Weeping Water were compared in this way with soils from Wauneta and McCook, a Lincoln soil containing .5 per cent humus was in no way similar in appearance to a Wauneta soil with the same humus content. This was, no doubt, due to the widely varying amounts of lime and iron in the two types of soil. The same difficulty was experienced in comparing any of the above mentioned soils with soils from Holdrege or Hastings. The differences in color were especially marked in the subsoils. Consequently, such a comparison of soils from different localities would be of very little significance, unless one were already very familiar with each soil in all of its characteristics. Where the solutions and the colorimeter are used, however, a striking concordance between the colorimetric and the gravimetric results is generally noticed, excepting in the very weak solutions taken from soils of very low humus content. It is also observed that better results are obtained when the standard is a soil of the same type and locality as the soil under investigation.

THE PHOTOMETRIC METHOD

Another method which was tried briefly, and which is especially applicable to soils containing 1.00 per cent or more of humus, is the photometric method, which is a modification of the colorimetric method. In this method it is particularly advisable to use a standard from the same locality as the sample being analyzed. Alway and Pinckney[3] did considerable work on this method and describe it as follows: "As a source of light a candle is used, it being placed in a box with a hole, half an inch in diameter, in the top. The candle is held in a clamp 24 inches below the top of the box. Two Hehner cylinders, both of the same internal diameter, are connected by means of a rubber tube, both stopcocks closed and the one cylinder partly filled with the standard solution. The empty cylinder is placed over the opening in the top of the

[3] Agri. Exp. Sta. Uni. of Nebr. 25th Annual Report.

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box and the cylinder containing the standard supported on a stand at a height of 6 to 12 inches above the former. After lighting the candle and darkening the room as much as possible, the stopcock of the higher cylinder is opened wide. While the operator has one hand on the stopcock of the lower cylinder and has one eye over the latter, watching the candle flame, the solution is allowed to slowly enter until the flame just disappears. Then the stopcock is closed and the height of the column of solution recorded, after which the lower cylinder is raised and the stopcock opened so that part of the solution flows back into the other cylinder. Then the determination is repeated until two or three successive readings give approximately the same height, the average of these being used in the calculation. After thus determining the depth of the column of the standard extract required to hide the candle flame, similar determinations were made with all the extracts. It much simplifies the calculations if in all cases equal weights of soil have been extracted and the extracts have been made up to the same volume. . . . Where the same graduated cylinders, both of the same internal diameter, are used in all cases, it suffices to record the volume of the extract required to hide the candle flame. Otherwise, it is necessary to measure the depth of the column of solution. . . . Provided that the same weight of soil has been used and that the humus extracts have been made up to the same volume, the percentages of humus will vary inversely as the heights of the columns of extract required to hide the candle flame." This method was tried only in the case of some of the soils of high humus content, and with indifferent success.

The above, in brief, are the methods tried, and as indicated before, the Rather method was adopted for the preparation of the humus extracts.

DETERMINATION OF TOTAL NITROGEN

But very few total nitrogen determinations were made, since the totals on both the individual fields and the composites of the transition series had previously been made by Mr. McDole, of this station, and his figures were made use of in calculating the humus-nitrogen ratios. Any nitrogen determinations that were made,

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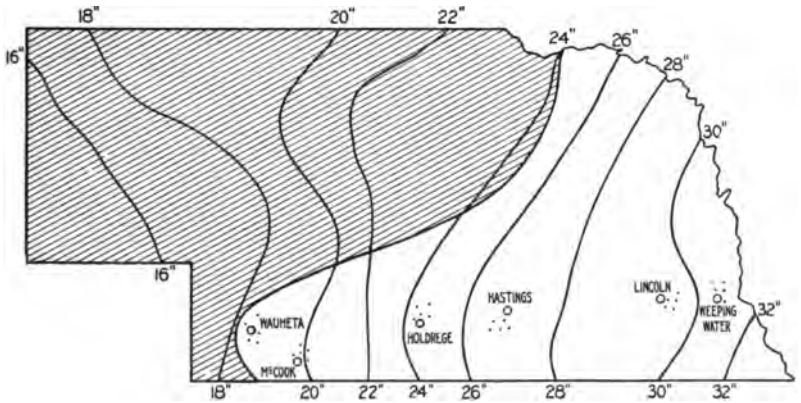
however, were made by the Kjeldahl method, which is too well known to need any description.

THE DETERMINATION OF HUMUS NITROGEN

A considerable number of determinations of nitrogen in humus, or "humus nitrogen" were made, however, and but two methods were tried. These two are the Hilgard method and the Alway-Bishop method. The extraction in the Hilgard method is carried out in the same manner as the extraction in the determination of humus by the Hilgard method, except that 4 per cent potassium hydroxid instead of ammonium hydroxide is used; a determina-



MAP OF NEBRASKA, SHOWING OUTLINE OF THE LOESS AREA (UNSHADED), THE LOCATION OF THE PRAIRIE FIELDS SAMPLED, AND THE NORMAL ANNUAL PRECIPITATION

tion of nitrogen in this extract is then carried out by the Kjeldahl method. In the Alway-Bishop[4] method, however, the extraction is made in a different manner. The extraction is started in the same way as in the Official method for the determination of humus, with the exception that 4 per cent potassium hydroxide in place of 4 per cent ammonium hydroxide is used, and the containers are allowed to remain eight days, with an occasional shaking

[4] E. S. Bishop. Thesis for Master's degree, Univ. of Nebr., 1911.

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before the supernatant liquid is drawn off. Then, as in the Hilgard method, the Kjeldahl nitrogen determination is run on the extract. In order to obtain a check on the results in both these methods, a nitrogen determination is also run on the soil residues left after the extraction is completed. The two results are then added together, and the total should equal the total nitrogen content as determined in a separate analysis. The Alway-Bishop method gives results slightly higher than those of the Hilgard method. This is, no doubt, due to a more complete extraction by the Alway-Bishop method. The Alway-Bishop method was adopted for this work, because, although it takes eight days for the extraction, it does not require any attention, other than an occasional shaking, after once started. The Hilgard method, however, requires constant attention, and may take several days, also, before the extraction is complete; so that, on the whole, more actual time is consumed in the Hilgard method than in the Alway-Bishop method.

TABLE I. COMPARISON OF DIFFERENT METHODS FOR THE DETERMINATION OF HUMUS

	Official Method		Hilgard Method		Rather Method		Blish Method	
	Humus, Per Cent	Humus Ash, Per Cent	Humus, Per Cent	Humus Ash, Per Cent	Humus, Per Cent	Humus Ash, Per Cent	Humus, Per Cent	Humus Ash, Per Cent
1	3.58	6.78	2.32	.64	2.02	.19	2.19	.26
2	3.44	5.40	2.14	.74	2.16	.38	2.40	.24
3	.....	.....	2.42	.68	2.12	.60	2.40	.24
4	.....	.....	2.23	1.30	2.24	.63	.....	.....
5	.....	.....	2.13	.87	2.20	.55	.....	.....
6	.....	.....	2.24	1.41	2.19	.63	.....	.....
7	.....	.....	2.17	1.33	2.15	.68	.....	.....
Average.....	3.51	6.09	2.23	1.14	2.15	.52	2.33	.25

In Table I are shown the results of gravimetric humus determinations on Lincoln surface soil, using the different methods described in the preceding pages.

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Table II shows the results of humus-nitrogen determination by the Hilgard and the Alway-Bishop methods, using Lincoln surface soil in all instances.

TABLE II. HUMUS NITROGEN IN LINCOLN SURFACE SOIL

Determination Number	Humus Nitrogen Hilgard Method, Per Cent	Humus Nitrogen Alway-Bishop Method, Per Cent
1	.139	.161
2	.140	.160
3	.131	.154
4	.130	.157
5	.128	.156
6	.144	.157
7	.142	.162
8	.137	.162
9	.137	.160
10	.142	.160
11	....	.159
Average	.137	.160

Total nitrogen in L. S. soil averaged .244 per cent. Per cent. of nitrogen in humus = 7.3 per cent.

$\frac{\text{Humus}}{\text{total nitrogen}} = 9.0.$

The following set of tables shows the humus content of the soils from each of the five fields of each area of the Transition series. Also, the humus-nitrogen ratios are given for the first two feet of each field; lower than this the ratio has but little significance, since a slight error, or variation in a humus determination, causes an exceedingly large variation in the ratio, and the per cent of error in the humus determination of a subsoil is necessarily large, so that below the first two feet the ratios are not very constant. The per cent of nitrogen in humus is given for the first foot of all soils. This is the only depth in the case of samples from the individual fields on which humus nitrogen determinations were made. They were run on the composites from all depths, however, but owing to the unreliability of a humus determination below the first two feet, they are of little significance.

In the following set of tables, the humus content was determined gravimetrically for all samples from the first and second

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feet, while for samples from below the second foot, the colorimetric results are considered a more correct and reliable estimate of the humus.

TABLE III. SOILS FROM THE WAUNETA AREA

Humus

Depth	Field 1, Per Cent	Field 2, Per Cent	Field 3, Per Cent	Field 4, Per Cent	Field 5, Per Cent	Average, Per Cent
1st ft.	0.99	1.04	1.07	0.99	1.02	1.02
2d ft.	.65	.61	.72	.67	.64	.65
3d ft.	.74	1.08	.74	.93	.50	.80
4th ft.	.39	1.00	.70	.58	.34	.60
5th ft.	.26	.31	.87	.26	.20	.38
6th ft.	.18	.19	.82	.15	.17	.30

Humus-Nitrogen Ratio

1st ft.	7.33	7.53	7.43	7.67	7.72	7.53
2d ft.	8.12	7.82	7.82	8.17	8.10	7.92

Per Cent of Nitrogen in the Humus

1st ft.	8.3	8.0	8.0	7.8	7.7	8.0

TABLE IV. SOILS FROM THE MCCOOK AREA

Humus

Depth	Field 1, Per Cent	Field 2, Per Cent	Field 3, Per Cent	Field 4, Per Cent	Field 5, Per Cent	Average, Per Cent
1st ft.	1.12	1.27	1.15	1.15	1.04	1.15
2d ft.	.55	.81	.60	.67	.49	.62
3d ft.	.39	1.04	.33	.45	.19	.48
4th ft.	.33	.82	.22	.24	.18	.36
5th ft.	.19	.30	.31	.19	.17	.23
6th ft.	.21	.19	.24	.16	.14	.19

Humus-Nitrogen Ratio

1st ft.	7.83	8.70	8.33	8.04	8.32	8.28
2d ft.	7.00	9.00	7.50	7.61	5.76	7.38

Per Cent of Nitrogen in the Humus

1st ft.	8.0	7.2	7.4	7.5	7.5	7.5

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TABLE V. SOILS FROM THE HOLDREGE AREA

Humus

Depth	Field 1, Per Cent	Field 2, Per Cent	Field 3, Per Cent	Field 4, Per Cent	Field 5, Per Cent	Average, Per Cent
1st ft.	1.37	1.44	1.63	1.70	1.90	1.61
2d ft.	.69	.79	1.01	.95	.93	.87
3d ft.	.37	.44	.66	.70	.39	.51
4th ft.	.22	.25	.44	.58	.24	.34
5th ft.	.16	.19	.22	.16	.15	.18
6th ft.	.13	.15	.20	.10	.13	.14

Humus-Nitrogen Ratio

1st ft.	8.00	8.27	9.94	9.00	9.09	8.90
2d ft.	7.75	8.06	9.10	9.13	9.03	8.61

Per Cent of Nitrogen in the Humus

1st ft.	7.6	7.5	6.8	7.00	6.5	7.1

TABLE VI. SOILS FROM THE HASTINGS AREA

Humus

Depth	Field 1, Per Cent	Field 2, Per Cent	Field 3, Per Cent	Field 4, Per Cent	Field 5, Per Cent	Average, Per Cent
1st ft.	1.50	1.67	1.39	1.56	1.42	1.51
2d ft.	.85	.92	.84	.91	.79	.86
3d ft.	.42	.50	.40	.36	.28	.39
4th ft.	.26	.41	.17	.30	.15	.23
5th ft.	.23	.41	.14	.29	.13	.22
6th ft.	.13	.30	.10	.15	.12	.14

Humus-Nitrogen Ratio

1st ft.	8.77	.....	7.59	9.23	8.16	8.40
2d ft.	8.94	.....	8.23	9.78	7.50	8.67

Per Cent of Nitrogen in the Humus

1st ft.	8.40	7.5	8.0	8.4	7.6	8.0

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TABLE VII. SOILS FROM THE LINCOLN AREA

Humus

Depth	Field 1, Per Cent	Field 2, Per Cent	Field 3, Per Cent	Field 4, Per Cent	Field 5, Per Cent	Average, Per Cent
1st ft.	2.30	2.22	2.19	2.27	2.34	2.26
2d ft.	1.08	.96	.80	.90	1.16	.98
3d ft.	.17	.13	.11	.23	.26	.18
4th ft.	.09	.08	.06	.12	.12	.09
5th ft.	.04	.05	.05	.09	.10	.07
6th ft.	.05	.07	.05	.06	.09	.06

Humus-Nitrogen Ratio

1st ft.	9.54	9.06	9.35	9.53	9.67	9.42
2d ft.	8.85	6.62	6.45	7.37	8.72	7.60

Per Cent of Nitrogen in the Humus

1st ft.	6.6	6.5	6.6	6.5	6.7	6.6

TABLE VIII. SOILS FROM THE WEEPING WATER AREA

Humus

Depth	Field 1, Per Cent	Field 2, Per Cent	Field 3, Per Cent	Field 4, Per Cent	Field 5, Per Cent	Average, Per Cent
1st ft.	2.13	2.09	2.24	2.43	2.28	2.24
2d ft.	1.18	1.30	1.08	1.65	1.27	1.29
3d ft.	.14	.10	.15	.14	.11	.13
4th ft.	.07	.08	.11	.10	.09	.09
5th ft.	.06	.06	.04	.08	.08	.06
6th ft.	.06	.05	.04	.04	.04	.05

Humus-Nitrogen Ratio

1st ft.	9.34	9.00	9.25	10.00	9.20	9.49
2d ft.	7.94	8.72	7.40	9.65	8.30	8.43

Per Cent of Nitrogen in the Humus

1st ft.	6.9	7.2	7.4	6.5	6.5	6.9

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TABLE IX. HUMUS ASH CONTENT OF THE INDIVIDUAL FIELDS[5]

Depth	Field 1, Per Cent	Field 2, Per Cent	Field 3, Per Cent	Field 4, Per Cent	Field 5, Per Cent	Average, Per Cent
Wauneta Area						
1st ft.	.40	.33	.45	.34	.42	.39
2d ft.	.34	.27	.35	.32	.32	.32
McCook Area						
1st ft.	.29	.32	.30	.29	.26	.29
2d ft.	.35	.27	.36	.31	.36	.33
Holdrege Area						
1st ft.	.30	.29	.29	.34	.29	.30
2d ft.	.25	.23	.30	.28	.28	.27
Hastings Area						
1st ft.	.24	.19	.20	.27	.23	.23
2d ft.	.27	.22	.27	.21	.22	.24
Lincoln Area						
1st ft.	.26	.38	.25	.22	.31	.28
2d ft.	.43	.18	.15	.19	.16	.22
Weeping Water Area						
1st ft.	.29	.28	.36	.32	.37	.32
2d ft.	.16	.16	.14	.34	.18	.20

The following Tables Nos. X, XI and XII show work done on the composites from the individual fields of the Transition series. Each composite represents five individual fields. Since samples were taken at depths of 1, 2, 3, 4, 5 and 6 feet, there are six composites for each area. The humus, humus ash and humus nitrogen determinations were run in duplicate and are shown in duplicate in the tables. In calculating the per cent of nitrogen in humus and the humus-nitrogen ratio, an average of the duplicates was taken in all cases.

[5] Gravimetric determinations were made on only the first two feet.

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TABLE X. HUMUS AND HUMUS ASH IN COMPOSITE SAMPLES FROM DIFFERENT AREAS

Humus

Depth	Wauneta		McCook		Holdrege		Hastings		Lincoln		Weeping Water	
	1	2	1	2	1	2	1	2	1	2	1	2
1st ft.....	1.08	1.00	1.07	1.04	1.68	1.70	1.65	1.60	2.30	2.40	2.37	2.27
2d ft.....	.36	.38	.47	.48	.72	.71	.62	.63	1.04	1.02	1.12	1.11
3d ft.....	.51	.46	.36	.35	.34	.32	.36	.35	.39	.38	.54	.57
4th ft.....	.35	.34	.32	.31	.29	.29	.26	.26	.24	.27	.26	.28
5th ft.....	.26	.27	.26	.28	.22	.20	.30	.26	.20	.22	.23	.24
6th ft.....	.30	.23	.27	.27	.18	.18	.25	.25	.12	.18	.16	.22

Humus Ash

1st ft.....	.60	.48	.57	.58	.64	.65	.82	.78	1.32	1.28	1.17	1.17
2d ft.....	.42	.43	.36	.35	.30	.30	.24	.20	.20	.12	.26	.21
3d ft.....	.35	.40	.44	.49	.31	.37	.26	.28	.18	.21	.26	.20
4th ft.....	.47	.44	.51	.54	.34	.40	.39	.40	.22	.29	.17	.22
5th ft.....	.56	.50	.54	.55	.36	.38	.41	.40	.25	.24	.28	.27
6th ft.....	.62	.58	.56	.53	.38	.40	.42	.46	.36	.32	.32	.22

TABLE XI. HUMUS NITROGEN IN THE COMPOSITES

Depth	Wauneta		McCook		Holdrege		Hastings		Lincoln		Weeping Water	
	1	2	1	2	1	2	1	2	1	2	1	2
1st ft.....	.080	.082	.082	.085	.110	.115	.110	.113	.143	.140	.145	.143
2d ft.....	.022	.022	.032	.035	.046	.045	.045	.045	.067	.067	.087	.087
3d ft.....	.036	.035	.015	.015	.021	.022	.018	.016	.029	.....	.040	.035
4th ft.....	.034	.032	.004	.004	.010	.009	.008	.007	.015	.014	.021	.023
5th ft.....	.015	.015	.002	.003	.004	.003	.003	.003	.010	.010	.012	.012
6th ft.....	.013	.014	.001	.001	.002	.002	.003	.003	.010	.010	.007	.006

Per Cent of Nitrogen in Humus

Depth	Wauneta	McCook	Holdrege	Hastings	Lincoln	Weeping Water
1st ft.....	7.80	7.90	6.62	6.20	6.04	6.20
2d ft.....	6.52	7.00	6.34	7.26	6.5	8.05
3d ft.....	7.10	4.29	6.36	4.60	7.63	6.50
4th ft.....	9.12	1.30	3.45	3.10	6.00	8.15
5th ft.....	6.15	1.11	2.00	1.10	4.7	5.21
6th ft.....	5.18	.40	1.11	1.20	6.60	3.68

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Tables No. XI and XII show the humus nitrogen, the per cent of nitrogen in humus and humus-nitrogen ratio of all of the composites of the transition series, using the figures for only gravimetric humus determinations.

TABLE XII. HUMUS-NITROGEN RATIO FOR COMPOSITE SAMPLES FROM DIFFERENT AREAS

Depth, Feet	Wauneta	McCook	Holdrege	Hastings	Lincoln	Weeping Water
1	7.7	7.5	9.3	9.3	9.75	10.00
2	7.11	5.60	7.03	6.32	8.00	7.06
3	7.5	6.48	5.10	6.50	5.5	6.86
4	7.4	8.16	6.44	6.34	4.16	4.41
5	6.8	8.40	6.36	8.5	5.00	5.35
6	9.0	9.00	5.30	8.93	3.50	5.00

As previously indicated, considerable work was done on the estimation of humus in the soils of the transition series by different colorimetric methods. Solutions or extracts of humus in 4 per cent ammonia were prepared by the usual method from each individual field soil, making 180 solutions in all. These solutions, of course, varied in depth of color from deep black to almost colorless solutions. They were compared, first with the eye alone, and later the humus content in each was estimated, using a standard and a colorimeter. Colorimetric comparisons were also made using merely the soil itself, both in a moist and a dry condition. Twenty-five gram samples were weighed out in small porcelain dishes, and attempts were made to arrange them according to amount of humus, this being estimated by the depth of color in the soil. The results of the latter were fairly satisfactory when the soils were from the same locality, but when soils of different localities were brought together, the extreme differences in types of color, caused by substances other than humus, such as lime and iron, made a satisfactory and reliable comparison by this method impossible. This is shown by the following tables. From them it is seen that when soils of the same area were taken, they were arranged fairly accurately according to depth of color, but when all were mixed together, the uniformity

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of the gradation is lost, and with the exception of those soils which differ very widely in humus content, they seem to have been arranged in an almost haphazard manner. The idea, as expressed by the following table, was to arrange the soils, one after another, according to humus content, by judging from the depth of color, starting with the soils of high humus content, and gradually passing to those of low humus content. The arrangements of the areas, individually, are shown first, and

TABLE XIII. ARRANGEMENT OF SOILS OF EACH AREA, INDIVIDUALLY, WITH REGARD TO DEPTH OF COLOR

A. Wauneta Area

Soil Number	Field	Depth, Feet	Humus, Per Cent	Rank of Soil	
				by Color	by Humus Content
2875	1	1	1.17	1	1
2914	3	1	1.17	2	2
2935	4	1	1.00	3	4
2894	2	1	1.00	4	5
2956	5	1	1.00	5	6
2936	4	2	.93	6	8
2937	4	3	.93	7	9
2915	3	2	.87	8	10
2896	2	3	1.08	9	3
2876	1	2	.87	10	11
2957	5	2	.74	11	15
2895	2	2	.78	12	14
2897	2	4	1.00	13	7
2938	4	4	.58	14	19
2916	3	3	.74	15	16
2877	1	3	.74	16	17
2917	3	4	.70	17	18
2919	3	6	.82	18	13
2958	5	3	.50	19	20
2918	3	5	.87	20	12
2878	1	4	.39	21	21
2898	2	5	.31	22	23
2939	4	5	.26	23	24
2959	5	4	.34	24	22
2879	1	5	.26	25	25
2960	5	5	.20	26	26
2899	2	6	.19	27	27
2940	4	6	.15	28	30
2961	5	6	.17	29	29
2880	1	6	.15	30	28

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finally the arrangement of the soils from all six areas, taken collectively. The amounts of humus determined by the colorimetric method are used in this case.

B. McCook Area

Soil Number	Field	Depth, Feet	Humus, Per Cent	Rank of Soil	
				by Color	by Humus Content
2995	2	1	1.48	1	1
3014	3	1	1.17	2	2
3020	4	1	1.08	3	3
2976	1	1	.93	4	7
3039	5	1	1.00	5	6
2996	2	2	1.08	6	4
3021	4	2	.82	7	9
2997	2	3	1.04	8	5
3015	3	2	.61	9	10
3040	5	2	.40	10	13
2977	1	2	.52	11	11
2999	2	5	.30	12	18
2998	2	4	.82	13	8
3022	4	3	.45	14	12
2978	1	3	.39	15	14
3016	3	3	.33	16	15
3041	5	3	.19	17	23
2979	1	4	.33	18	16
3042	5	4	.18	19	27
3017	3	4	.22	20	21
3018	3	5	.31	21	17
3024	4	5	.19	22	24
3023	4	4	.24	23	19
3019	3	6	.24	24	20
3042	5	5	.17	25	28
2980	1	5	.19	26	25
3044	5	6	.14	27	30
3000	2	6	.19	28	26
3025	4	6	.16	29	29
2981	1	6	.21	30	22

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C. Holdrege Area

Soil Number	Field	Depth, Feet	Humus, Per Cent	Rank of Soil	
				by Color	by Humus Content
3115	4	1	2.00	1	2
3096	3	1	1.75	2	3
3135	5	1	2.15	3	1
3077	2	1	1.65	4	4
3058	1	1	1.48	5	5
3097	3	2	1.33	6	6
3116	4	2	1.17	7	7
3078	2	2	1.04	8	9
3136	5	2	1.17	9	8
3059	1	2	.78	10	10
3098	3	3	.66	11	12
3117	4	3	.70	12	11
3079	2	3	.44	13	14
3137	5	3	.39	14	16
3060	1	3	.37	15	17
3099	3	4	.44	16	15
3118	4	4	.58	17	13
3138	5	4	.24	18	20
3139	5	5	.15	19	26
3061	1	4	.22	20	21
3100	3	5	.22	21	22
3081	2	5	.25	22	18
3062	1	5	.16	23	24
3080	2	4	.25	24	19
3140	5	6	.13	25	28
3119	4	5	.16	26	25
3082	2	6	.15	27	27
3063	1	6	.13	28	29
3101	3	6	.20	29	23
3120	1	6	.10	30	30

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D. Hastings Area

Soil Number	Field	Depth, Feet	Humus, Per Cent	Rank of Soil	
				by Color	by Humus Content
3210	4	1	1.55	1	2
3229	5	1	1.55	2	3
3153	1	1	1.40	3	4
3191	3	1	1.26	4	5
3172	2	1	1.67	5	1
3173	2	2	.92	6	7
3211	4	2	1.00	7	6
3192	3	2	.82	8	8
3154	1	2	.82	9	9
3230	5	2	.82	10	10
3174	2	3	.50	11	11
3193	3	3	.40	12	15
3155	1	3	.42	13	12
3212	4	3	.36	14	16
3175	2	4	.41	15	14
3231	5	3	.28	16	20
3176	2	5	.41	17	13
3156	1	4	.26	18	21
3177	2	6	.30	19	17
3213	4	4	.30	20	18
3214	4	5	.29	21	19
3194	3	4	.17	22	23
3232	5	4	.15	23	25
3233	5	5	.13	24	27
3234	5	6	.12	25	29
3215	4	6	.15	26	24
3195	3	5	.14	27	26
3157	1	5	.23	28	22
3196	3	6	.10	29	30
3158	1	6	.13	30	28

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E. Lincoln Area

Soil Number	Field	Depth, Feet	Humus, Per Cent	Rank of Soil	
				by Color	by Humus Content
3267	1	1	2.55	1	1
3339	5	1	2.33	2	3
3321	4	1	2.33	3	4
3285	2	1	2.55	4	2
3303	3	1	2.15	5	5
3340	5	2	.84	6	7
3322	4	2	.56	7	9
3268	1	2	.87	8	6
3286	2	2	.64	9	8
3304	3	2	.30	10	10
3341	5	3	.26	11	11
3323	4	3	.23	12	12
3269	1	3	.17	13	13
3287	2	3	.13	14	14
3342	5	4	.12	15	15
3343	5	5	.10	16	18
3270	1	4	.09	17	19
3288	2	4	.08	18	22
3305	3	3	.11	19	17
3324	4	4	.12	20	16
3325	4	5	.09	21	20
3344	5	6	.09	22	21
3289	2	5	.05	23	26
3271	1	5	.04	24	30
3326	4	6	.06	25	25
3290	2	6	.07	26	23
3272	1	6	.05	27	27
3306	3	4	.06	28	24
3307	3	5	.05	29	28
3308	3	6	.05	30	29

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F. Weeping Water Area

Soil Number	Field	Depth, Feet	Humus, Per Cent	Rank of Soil	
				by Color	by Humus Content
3417	4	1	2.55	1	1
3436	5	1	2.15	2	3
3397	3	1	2.33	3	2
3377	2	1	2.00	4	5
3357	1	1	2.15	5	4
3418	4	2	1.40	6	6
3358	1	2	.70	7	10
3378	2	2	.72	8	8
3398	3	2	.72	9	9
3437	5	2	.78	10	7
3419	4	3	.14	11	12
3359	1	3	.14	12	13
3379	2	3	.10	13	16
3438	5	3	.11	14	14
3399	3	3	.15	15	11
3420	4	4	.10	16	17
3380	2	4	.08	17	19
3439	5	4	.09	18	18
3421	4	5	.08	19	20
3400	3	4	.11	20	15
3381	2	5	.06	21	23
3360	1	4	.07	22	22
3440	5	5	.08	23	21
3361	1	5	.06	24	24
3401	3	5	.04	25	27
3402	3	6	.04	26	28
3382	2	6	.05	27	26
3421½	4	6	.04	28	29
3362	1	6	.06	29	25
3441	5	6	.04	30	30

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TABLE XIV. ARRANGEMENT OF SOILS OF ALL SIX AREAS IN ORDER OF COLOR OF THE MOIST SOILS

Soil Number	Area	Field	Depth	Humus, Per Cent	Rank
3417	Weeping Water.....	4	1	2.55	1
3436	Weeping Water.....	5	1	2.15	7
3377	Weeping Water.....	2	1	2.00	11
3285	Lincoln.....	2	1	2.55	2
3267	Lincoln.....	1	1	2.55	3
3339	Lincoln.....	5	1	2.33	4
3321	Lincoln.....	4	1	2.33	5
3303	Lincoln.....	3	1	2.15	8
3357	Weeping Water.....	1	1	2.15	9
3397	Weeping Water.....	3	1	2.33	6
3135	Holdrege.....	5	1	2.15	10
3096	Holdrege.....	3	1	1.75	13
3077	Holdrege.....	2	1	1.65	17
3115	Holdrege.....	4	1	2.00	12
3058	Holdrege.....	1	1	1.48	18
3172	Hastings.....	2	1	1.67	14
3210	Hastings.....	4	1	1.55	15
3229	Hastings.....	5	1	1.55	16
2995	McCook.....	2	1	1.48	19
3191	Hastings.....	3	1	1.26	23
3153	Hastings.....	1	1	1.40	20
2914	Wauneta.....	3	1	1.17	24
2875	Wauneta.....	1	1	1.17	25
2935	Wauneta.....	4	1	1.00	37
3020	McCook.....	4	1	1.08	29
2956	Wauneta.....	5	1	1.00	38
3014	Wauneta.....	3	1	1.17	26
2894	Wauneta.....	2	1	1.00	34
2915	Wauneta.....	3	2	.87	43
2897	Wauneta.....	2	4	1.00	35
3418	Weeping Water.....	4	2	1.40	21
2896	Wauneta.....	2	3	1.08	30
3078	Holdrege.....	2	2	1.04	32
2936	Wauneta.....	4	2	.93	40
3039	McCook.....	5	1	1.00	36
3097	Holdrege.....	3	2	1.33	22
3173	Hastings.....	2	2	.92	43
2996	McCook.....	2	2	1.08	31
2937	Wauneta.....	4	3	.93	41
2976	McCook.....	1	1	.93	42
3136	Holdrege.....	5	2	1.17	27
2895	Wauneta.....	2	2	.78	54
3059	Holdrege.....	1	2	.78	55
3021	McCook.....	4	2	.82	48
2916	Wauneta.....	3	3	.74	57
2876	Wauneta.....	1	2	.87	44
2917	Wauneta.....	3	4	.70	62
2918	Wauneta.....	3	5	.87	45
2919	Wauneta.....	3	6	.87	49

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Soil Number	Area	Field	Depth	Humus, Per Cent	Rank
2957	Wauneta	5	2	.74	58
3116	Holdrege	4	2	1.17	28
3268	Lincoln	1	2	.87	46
3154	Hastings	1	2	.87	50
3098	Holdrege	3	3	.66	65
2877	Wauneta	1	3	.74	59
2938	Wauneta	4	4	.58	68
3230	Hastings	5	2	.82	51
3340	Lincoln	5	2	.84	47
3211	Hastings	4	2	1.00	39
3437	Weeping Water	5	2	.78	56
3378	Weeping Water	2	2	.72	60
3398	Weeping Water	3	2	.72	61
2997	McCook	2	3	1.04	33
2977	McCook	1	2	.52	71
3358	Weeping Water	1	2	.70	63
3304	Lincoln	3	2	.30	91
3322	Lincoln	4	2	.56	70
3192	Hastings	3	2	.82	52
3015	McCook	3	2	.61	67
3175	Hastings	2	4	.41	77
3117	Holdrege	4	3	.70	64
3079	Holdrege	2	3	.44	75
2998	McCook	2	4	.82	53
3176	Hastings	2	5	.41	78
3231	Hastings	5	3	.28	96
3174	Hastings	2	3	.50	72
3022	McCook	4	3	.45	74
2978	McCook	1	3	.39	81
3214	Hastings	4	5	.29	95
2981	McCook	1	6	.21	111
2959	Wauneta	5	4	.34	86
3060	Holdrege	1	3	.37	84
3212	Hastings	4	3	.36	85
3286	Lincoln	2	2	.64	66
2940	Wauneta	4	6	.15	129
2898	Wauneta	2	5	.31	89
3138	Holdrege	5	4	.24	103
3118	Holdrege	4	4	.58	69
2878	Wauneta	1	4	.39	82
2999	McCook	2	5	.30	92
2939	Wauneta	4	5	.26	98
2879	Wauneta	1	5	.26	99
3041	McCook	5	3	.19	114
3061	Holdrege	1	4	.22	106
3100	Holdrege	3	5	.22	108
2958	Wauneta	5	3	.50	73
3081	Holdrege	2	5	.19	115
2899	Wauneta	2	6	.19	116
3213	Hastings	4	4	.30	93

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Soil Number	Area	Field	Depth	Humus, Per Cent	Rank
3137	Holdrege	5	3	.39	83
3023	McCook	4	4	.24	104
3099	Holdrege	3	4	.44	76
3016	McCook	3	3	.33	87
3019	McCook	3	6	.24	105
3040	McCook	5	2	.40	79
3156	Hastings	1	4	.26	100
3177	Hastings	2	6	.30	94
3193	Hastings	3	3	.40	80
2980	McCook	1	5	.19	117
2979	McCook	1	4	.33	88
3215	Hastings	4	6	.15	130
3025	McCook	4	6	.16	126
3017	McCook	3	4	.22	109
3232	Hastings	5	4	.15	131
3063	Holdrege	1	6	.13	138
3024	McCook	4	5	.19	118
3082	Holdrege	2	6	.15	132
3043	McCook	5	5	.17	122
3044	McCook	5	6	.14	135
2961	Wauneta	5	6	.17	123
3042	McCook	5	4	.18	120
2960	Wauneta	5	5	.20	112
3018	McCook	3	5	.31	90
3062	Holdrege	1	5	.16	127
3120	Holdrege	4	6	.10	150
3139	Holdrege	5	5	.15	133
3080	Holdrege	2	4	.25	102
3234	Hastings	5	6	.12	143
2880	Wauneta	1	6	.18	121
3233	Hastings	5	5	.13	142
3000	McCook	2	6	.19	119
3158	Hastings	1	6	.13	139
3196	Hastings	3	6	.10	151
3101	Holdrege	3	6	.20	113
3119	Holdrege	4	5	.16	128
3194	Hastings	3	4	.17	124
3195	Hastings	3	5	.14	136
3155	Hastings	1	3	.42	97
3157	Hastings	1	5	.23	110
3140	Holdrege	5	6	.13	140
3341	Lincoln	5	3	.26	101
3287	Lincoln	2	3	.13	141
3323	Lincoln	4	3	.23	107
3269	Lincoln	1	3	.17	125
3342	Lincoln	5	4	.12	144
3419	Weeping Water	4	3	.14	137
3305	Lincoln	3	3	.11	147
3343	Lincoln	5	5	.10	152
3290	Lincoln	2	6	.07	163

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Soil Number	Area	Field	Depth	Humus, Per Cent	Rank
3270	Lincoln.....	1	4	.09	155
3288	Lincoln.....	2	4	.08	159
3399	Weeping Water.....	3	3	.15	134
3324	Lincoln.....	4	4	.12	145
3289	Lincoln.....	2	5	.05	170
3272	Lincoln.....	1	6	.05	171
3344	Lincoln.....	5	6	.09	156
3271	Lincoln.....	1	5	.04	175
3326	Lincoln.....	4	6	.06	165
3421½	Weeping Water.....	4	6	.04	176
3400	Weeping Water.....	3	4	.11	148
3325	Lincoln.....	4	5	.09	157
3439	Weeping Water.....	5	4	.09	158
3361	Weeping Water.....	1	5	.06	166
3438	Weeping Water.....	5	3	.11	149
3401	Weeping Water.....	3	5	.04	177
3360	Weeping Water.....	1	4	.07	164
3362	Weeping Water.....	1	6	.06	167
3380	Weeping Water.....	2	4	.08	160
3440	Weeping Water.....	5	5	.08	161
3359	Weeping Water.....	1	3	.14	146
3381	Weeping Water.....	2	5	.06	168
3306	Lincoln.....	3	4	.06	169
3379	Weeping Water.....	2	3	.10	153
3420	Weeping Water.....	4	4	.10	154
3308	Lincoln.....	3	6	.05	172
3421	Weeping Water.....	4	5	.08	162
3402	Weeping Water.....	3	6	.04	178
3307	Lincoln.....	3	5	.05	173
3382	Weeping Water.....	2	6	.05	174
3441	Weeping Water.....	5	6	.04	179

The humus extracts from the soils of the transition series gave better results when examined colorimetrically than did the soils themselves. This, of course, is due to the fact that in the extracts only humus is present; all other foreign matter which would affect the color has been eliminated. The solutions were first examined simply by placing the containers before a white background, and estimating the humus content by comparison with a known standard. An attempt was made, as was done in the case of the soil samples in the porcelain dishes, to arrange all of the solutions in the order of depth of color, beginning with the lightest one. They were then examined in the colorimeter, as previously described. The following table shows the results of both operations, and it is readily seen that the solutions may be

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TABLE XV. ARRANGEMENT OF HUMUS EXTRACTS OF THE TRANSITION SOILS ACCORDING TO COLOR OF SOLUTIONS IN FLASKS

Order of Arrangement	Per Cent Humus by Colorimeter	Order of Arrangement	Per Cent Humus by Colorimeter	Order of Arrangement	Per Cent Humus by Colorimeter
1	.04	49	.16	97	.39
2	.04	50	.15	98	.44
3	.04	51	.15	99	.40
4	.04	52	.13	100	.40
5	.04	53	.13	101	.40
6	.05	54	.16	102	.39
7	.05	55	.18	103	.37
8	.05	56	.15	104	.42
9	.05	57	.23	105	.45
10	.05	58	.22	106	.50
11	.06	59	.18	107	.39
12	.06	60	.17	108	.44
13	.06	61	.20	109	.61
14	.06	62	.26	110	.56
15	.06	63	.17	111	.52
16	.07	64	.19	112	.56
17	.08	65	.19	113	.58
18	.08	66	.24	114	.64
19	.08	67	.19	115	.72
20	.09	68	.20	116	.70
21	.09	69	.26	117	.78
22	.07	70	.24	118	.58
23	.08	71	.16	119	.70
24	.09	72	.19	120	.72
25	.10	73	.19	121	.74
26	.10	74	.19	122	.66
27	.11	75	.22	123	.74
28	.10	76	.23	124	.82
29	.11	77	.25	125	.87
30	.13	78	.23	126	.84
31	.09	79	.22	127	.70
32	.11	80	.24	128	.78
33	.15	81	.30	129	.74
34	.12	82	.26	130	.70
35	.14	83	.28	131	.82
36	.17	84	.21	132	.93
37	.10	85	.29	133	.78
38	.10	86	.26	134	.82
39	.12	87	.30	135	1.00
40	.13	88	.31	136	.93
41	.12	89	.31	137	.82
42	.13	90	.33	138	.87
43	.14	91	.38	139	.82
44	.14	92	.36	140	.87
45	.15	93	.36	141	.82
46	.15	94	.31	142	.87
47	.14	95	.33	143	1.08
48	.17	96	.34	144	1.00

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Order of Arrangement	Per Cent Humus by Colorimeter	Order of Arrangement	Per Cent Humus by Colorimeter	Order of Arrangement	Per Cent Humus by Colorimeter
145	1.00	157	1.17	169	1.40
146	1.17	158	1.04	170	1.55
147	1.00	159	1.48	171	2.55
148	.93	160	1.55	172	2.33
149	1.08	161	1.33	173	2.15
150	1.17	162	1.40	174	2.55
151	1.08	163	1.65	175	2.33
152	1.17	164	2.00	176	2.55
153	1.04	165	2.15	177	2.00
154	1.17	166	1.75	178	2.15
155	1.00	167	1.48	179	2.33
156	1.00	168	1.26	180	2.15

arranged in a fairly satisfactory manner—much more so than the soils themselves.

Table No. XVI gives the humus content of the composites of the individual fields from the Transition series, as determined by the colorimeter, which has been previously described. The gravi-

TABLE XVI. COMPARISON OF GRAVIMETRIC AND COLORIMETRIC DETERMINATIONS OF HUMUS IN THE COMPOSITES

Humus

Soil Number	Colorimetric Per Cent	Gravimetric Per Cent	Soil Number	Colorimetric Per Cent	Gravimetric Per Cent
3480	2.53	2.43	3460	.20	.27
3486	2.20	2.40	3466	.18	.27
3468	2.03	1.69	3461	.20	.27
3474	1.75	1.63	3467	.15	.27
3456	1.13	1.04	3471	.16	.29
3468	1.13	1.06	3488	.16	.57
3469	.87	.71	3477	.15	.26
3487	.66	1.08	3478	.14	.28
3458	.56	.48	3482	.11	.38
3475	.60	.62	3472	.11	.21
3463	.58	.48	3479	.11	.25
3481	.60	1.03	3473	.11	.18
3459	.38	.34	3490	.08	.23
3457	.35	.37	3485	.08	.15
3464	.36	.36	3489	.07	.27
3470	.34	.33	3491	.06	.19
3465	.24	.32	3483	.05	.26
3476	.23	.37	3484	.04	.21

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metric per cents are also shown, for comparison of the two methods. The colorimetric per cents are set down according to rank and the corresponding gravimetric results placed opposite.

The humus content of the individual fields as determined by the colorimeter has been shown in previous tables. In the tables on pages 11–33 of this thesis all of the humus per cents, except those of the first and second feet, are the results of the colorimetric method. Since gravimetric determinations were made only on the first and second foot samples Table No. XVII will

TABLE XVII. COMPARISON OF GRAVIMETRIC AND COLORIMETRIC HUMUS DETERMINATIONS ON INDIVIDUAL FIELDS

Wauneta Area

	Field 1		Field 2		Field 3		Field 4		Field 5	
	Col.	Grav.	Col.	Grav.	Col.	Grav.	Col.	Grav.	Col.	Grav.
1st ft...	1.17	.99	1.00	1.04	1.17	1.07	1.00	.99	1.00	1.02
2d ft...	.87	.65	.78	.61	.87	.72	.93	.67	.74	.64

McCook Area

1st ft...	.93	1.12	1.48	1.27	1.17	1.15	1.08	1.15	1.00	1.04
2d ft...	.52	.55	1.08	.81	.61	.60	.82	.67	.40	.49

Holdrege Area

1st ft...	1.48	1.37	1.65	1.44	1.75	1.63	2.00	1.70	2.15	1.90
2d ft...	.78	.69	1.04	.79	1.33	1.01	1.17	.95	1.17	.93

Hastings Area

1st ft...	1.40	1.50	1.72	1.67	1.26	1.39	1.55	1.56	1.55	1.42
2d ft...	.82	.85	.99	.92	.82	.84	1.00	.91	.82	.79

Lincoln Area

1st ft...	2.55	2.30	2.55	2.22	2.15	2.19	2.33	2.27	2.33	2.34
2d ft...	.87	1.08	.64	.96	.30	.80	.56	.90	.84	1.16

Weeping Water Area

1st ft...	2.15	2.13	2.00	2.09	2.33	2.24	2.55	2.43	2.15	2.28
2d ft...	.70	1.18	.72	1.30	.72	1.08	1.40	1.65	.78	1.27

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show a comparison of these gravimetric results with colorimetric determinations made on the same soils. In the majority of cases, the results obtained by the different methods agree fairly well, while in many instances they are strikingly close together.

The photometric method, which has been previously described, was tried but very briefly on transition soils, with only indifferent success. It was tried only on the first foot samples of the composites. The photometric method is convenient only for dark solutions, and is not practical for soils containing less than 1.00 per cent humus. It is not only slower in operation than the colorimetric method, but its results did not agree nearly so well with those of the gravimetric method, as the accompanying table shows. In soils of comparatively high humus content, however, it will give a fair estimation of the amount of humus per cent, as Alway and Pinckney demonstrated when they examined a large number of soils by this method several years ago. In this method it seems especially desirable that the standard be from the same locality as the soil under examination. The following table shows the agreement of the photometric with the gravimetric results obtained from determinations on the first foot of the composites from the transition series.

TABLE XVIII. COMPARISON OF PHOTOMETRIC AND GRAVIMETRIC HUMUS DETERMINATIONS

Soil Number	Photometric Per Cent	Gravimetric Per Cent	Soil Number	Photometric Per Cent	Gravimetric Per Cent
3456	1.37	1.04	3474	1.88	1.63
3462	1.37	1.06	3480	2.76	2.38
3468	2.43	1.69	3486	2.68	2.32

Samples of first foot composites from Lincoln, Weeping Water, Hastings and Holdrege were extracted with 4 per cent ammonia by the Hilgard method and it took fourteen days for a complete extraction. Humus determinations were made both colorimetrically and gravimetrically and the results compared with the results using "Rather Method" extractions from the same soils. Gravimetrically, the results were fairly concordant, but

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colorimetrically the Hilgard solutions ran much higher than did the Rather solutions, this probably being due to the fact that the small amount of extremely fine clay which is carried through the filter in the Hilgard method renders the solution less transparent in the colorimeter. The following table is self-explanatory.

TABLE XIX. COMPARISON OF THE RESULTS OF DIFFERENT METHODS OF EXTRACTING HUMUS

Composite Number	Area and Depth	Hilgard (Grav.)	Rather (Grav.)	Hilgard (Col.)	Rather (Col.)
3486	W. W. 1st ft.....	2.22	2.27	2.97	2.24
3486	W. W. 1st ft.....	2.25	2.37	2.94	2.20
3480	L. 1st ft.....	2.45	2.40	2.80	2.40
3480	L. 1st ft.....	2.31	2.30	2.67	2.53
3474	Hast. 1st ft.....	1.64	1.65	2.02	1.76
3474	Hast. 1st ft.....	1.69	1.60	2.02	1.75
3468	Hold. 1st ft.....	1.90	1.68	2.11	2.03
3468	Hold. 1st ft.....	1.85	1.70	2.11	1.86

CONCLUSIONS

1. The Rather method for the determination of humus is the most practical of all gravimetric methods tried, and seems to be the most accurate method for determining humus in the first and second feet of Nebraska loess soils.

2. Below the first and second feet, the colorimetric method is the most practical method.

3. For the determination of humus-nitrogen, the Alway-Bishop method seems to be the most satisfactory method as it combines accuracy with economy of time.

4. The humus content of the first two feet of the eastern loess soils in Nebraska is approximately twice that of the first two feet of the western loess soils.

5. On the other hand, the humus content of the fifth and sixth feet of the western soils is two or three times that of the eastern loess soils of the same depth.

6. The decrease of humus content with the depth of soil is therefore much more gradual in the case of the western loess soils than it is in the case of the eastern soils.

7. The humus-nitrogen ratio is slightly higher in the east than

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in the west, although, on the whole, it is fairly constant throughout the loess region.

8. The nitrogen content of humus is slightly higher in the west than in the east, although it also is fairly constant throughout the entire loess area.

9. The so-called "humus ash," as determined by the Rather method, shows a tendency to run a trifle higher in the western soils than in the eastern.

10. With regard to the comparison of soil colors, and the relation of soil color to humus content, it is concluded that the color of the soil may be associated fairly closely with the humus content when the soils under inspection are from the same locality, but when soils of different localities are brought together the extreme differences in types of color, caused by substances other than humus, such as lime and iron, made a satisfactory and reliable comparison by this method impossible.

11. An arrangement with regard to color intensity, using the humus extract instead of the soils themselves, may be made with a fair degree of accuracy without the colorimeter.

12. The photometric determination of humus was attended with only indifferent success and did not give satisfactory results in the case of soils containing under one per cent of humus.

13. In preparing humus extracts for colorimetric determinations, solutions prepared by the Rather method give a clearer and more transparent solution than than do those prepared by the Hilgard method, due probably to the fact that a slight amount of clay is carried through the filter in using the Hilgard method.

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II.—ON THE SEDGES OF NEBRASKA (FAMILY CYPERACEAE)

BY JOHN MALLORY BATES

INTRODUCTION

The sedges (Family *Cyperaceae*) are grass-like plants, but easily distinguished from the true grasses (*Poaceae*) by the following characteristics: culms solid, pithy, cylindrical, trigonous or flattened. Grass culms by contrast are mostly hollow and cylindrical. Sheaths not open lengthwise opposite the leaf blade, tightly enclosing the culm. Spikes simple or compound, mostly subtended by leaflike bracts, which are sometimes longer than the culm. Spikelets one- to many-flowered, each flower subtended and sometimes embraced by a single short herbaceous or scarious bract or scale, the most characteristic mark of this family. Fruit an achene, trigonous, lenticular, or plano-convex; in the genus *Carex* only, it is enclosed in a herbaceous sac called the perigynium.

Like grasses, they grow in all kinds of soil from the wettest to the driest, in the densest shade and on the open prairie, from the tropics to the limits of vegetation in latitude and altitude. Many are especially hardy, and flourish in the altitudes where grasses are few, and start in the spring when pastures are still bare, affording short feed for stock when it is most needed. On the average, they are not as valuable for hay and pasturage as the grasses, which is plainly shown by the fact that man has never found one that seemed worthy of cultivation for agricultural purposes, in rivalry with the grasses, which constitute the most valuable family of plants for the use of man in civilization.

Nevertheless the sedges form, in a stock-raising state like Nebraska, a not unimportant part of both hay and pasturage, and are eaten greedily, not only from necessity at times, but also for the very desirable variety that is thus added to the rations of our

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stock. In some swales and marshes where hay can be cut in the drier years, they outbulk the grasses ten to one, and the hay passes unquestioned in the market with no detriment to either horses or cattle.

The Study of the Sedges

After studying the sedges for twenty-four years, I can say that while they are undoubtedly as difficult as any of the flowering plants, there are none that give greater pleasure to the earnest student of systematic botany, for it is the difficult things in life that call out our resources and develop our powers. Yet I observe that but few college or university students have shown an interest in them, and fear that it is because the sedges bear a bad reputation. I imagine, also, that it is partly because the collector finds that he can do little with them in bloom, beyond settling the genus, and he does not always have the opportunity to follow up the same set of plants into fruiting time and so complete his work. As I wish to increase the number of sedge students, especially among high school teachers, who have the opportunity of collecting all over the state, I venture to insert some practical suggestions that will facilitate the work.

Collect only (after a few studies in the floral construction of several genera) in fairly mature fruit, one to two months (a little more or less) after blooming. If over-ripe, save achenes in packets labeled exactly as is the plant. If scales are dropping, include them in good quantity with achenes. Use Britton's *Manual,* because it covers practically all our Nebraska forms. Use Gray's seventh edition *Manual* because it has the most scientific and practical keys that have so far been given to American students. It is a delight to use them. Proceed slowly; exercise great patience with your own success for a time. If you get a name from one whom you trust, go through all the steps as if you knew nothing about the name, and prove him right or wrong, as the case may be. A road often trod grows shorter with use. I can not say too emphatically, study sedges by groups of the most closely related species. Collect; *collect;* COLLECT! Mount and lay away an abundance of good material on each sheet without

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any study at all. Then when you have several hundred sheets and have leisure for slow work, study them for the prime object of segregating them into groups of closely related forms, such as (for instance) *Carex parryana, fusca, stricta, nebraskensis* and *aquatilis,* all Nebraska species. My own herbarium contains 516 sheets of *Carex* alone, representing over 160 species. You can get no intelligent view of so large and difficult a genus without this kind of work. The subgenus *Vignea* is probably more difficult than *Eucarex,* and the *straminea* group the hardest of all. It is better to leave these until some experience has been gained in other parts of the genus; but collect everything. You will never regret it, if you really become a sedge student. In order to see clearly the finer markings of the smaller achenes (about a half a millimeter in length) use a magnifier of 20 diameters. The cross striations and tubercular markings will be most interesting.

The Present Treatment of the Subject

The object of this bulletin is to bring our Nebraska sedges into critical relation with our latest manuals and with the studies of this subject that have been made and are now making in neighboring states. I have followed the order of Britton's *Manual,* because it contains practically all of our species. I have followed his nomenclature for convenience, except where Gray's seemed more in accordance with the facts as shown by our plants. It makes no difference to me whether I say *Carex fusca* or *buxbaumii,* but it makes much difference whether I say *Carex haydeni* or *Carex stricta decora.* I have used this discrimination several times.

I have given the county once for each citation of a locality, and several times where special emphasis on the locality of rare or otherwise important plants seemed to call for it. Credit has been given to herbaria rather than to collectors by name. The Seminar Herbarium of the State University has sedges contributed by Smith and Pound, H. J. Webber, Pound and Clements, J. J. Thornber, P. J. O'Gara, P. A. Rydberg, Bates, Hapeman, and several others. It has saved time and space to credit these simply "(Uni.)." Dr. Hapeman's own collection is marked "(Hapeman)" and mine "(Bates)." Our plants are found in all three by

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exchange or gift, but such sheets are not recognized in these notes. There is no unnecessary repetition. Several fine species or varieties are represented by only one sheet in the Seminar collection and it is very difficult now to ascertain the exact locality of collection, that we may mend this condition. I hope this revision and publication will stimulate such inquiry among those who live at these various stations. The last full catalog of the state Flora (1889) gave us 39 species of sedges, six of which have never been found in the state, so far as our specimens indicate. A few others have since been found that were then only accredited by the manuals. I now show in this bulletin 103 species, varieties and forms worthy of description; 42 of which are reached before we come to *Carex*, 61 in *Carex* alone. This is a most encouraging showing, and I hope that the next twenty-three years may be equally fruitful. I confidently assert that not one thousandth part of Nebraska has been studied by any critical student of this group. What then may we not expect for our state when its survey shall have been more nearly completed!

It is interesting to compare our findings with those of Iowa on the east of the Missouri River. *The Iowa Sedges* issued in 1898 by R. I. Cratty, a most creditable production, enumerates 114 species and varieties. Mr. Cratty writes me that six more should now be included, making 120 in all. This does not mean that Iowa has 17 more species than Nebraska, but rather that its plants have been studied much longer and more thoroughly. It suggests to us that we must explore our great and productive territory before a denser population and more intensive cultivation destroy and radically change our native flora.

I have no doubt that errors of judgment will be found in this bulletin. In my second revision of these sedges just before writing, I made several changes in identification. Another revision might result in still more. I only ask that the work be found worthy of candid criticism.

To Dr. Charles E. Bessey, the Nestor of western botanists, I owe whatever of inspiration I have. He guided my infant footsteps in systematic botany when I was forty-three years old. He never fails to kindle the latent spark in young or old. I thank

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him for the confidence displayed in entrusting this work to me, a neophyte, and hope it has not been wholly misplaced. For the use of Boott's *Magnum opus* on the genus *Carex,* and his encouraging words as I have read him parts of the Bulletin this winter, I am grateful.

If this effort shall result in making real progress in the survey of the state, I shall be content. It has been a labor of love.

RED CLOUD, NEBRASKA,
January 31, 1913

I. CYPERUS L.

1. **C. diandrus** Torr. Annual; in saturated soil, sand bars, etc., widely distributed. Valentine and Kennedy, Cherry Co.; Atkinson, Holt Co.; Callaway, Custer Co.; St. Paul, Howard Co. (Bates); Plummer's Ford, Thomas Co.; Pishelville, Knox Co. (University). I have seen it in many localities where it seemed too common to notice.
2. **C. rivularis** Kunth. Annual; in same habitat and at first glance looking like the last, but a good species. More common, apparently. Valentine; Callaway (Bates); Plummer's Ford; Nebraska City, Otoe Co.; Richardson Co.; Thedford, Thomas Co.; Bellevue, Douglas Co.; Franklin Co.; St. Paul; Pishelville; Atkinson (Uni.); Minden, Kearney Co. (Dr. Hapeman).
3. **C. aristatus** Rottb. (*inflexus* Muhl.) Annual; in same habitat; more common than the collections indicate. Red Cloud; Valentine; Callaway; (Bates); Minden (Dr. Hapeman); Lincoln, Laancaster Co.; Mullen, Hooker Co.; Cherry Co.; Pine Ridge, Sheridan Co.; northern Holt Co.; Scott's Bluff Co.; Thedford; Franklin, Franklin Co. (Uni.).
4. **C. schweinitzii** Torr. Perennial; in poor, dry, sandy soil. Valentine; Kennedy; Ewing, Holt Co.; St. Paul; Red Cloud, Webster Co. (Bates); Minden (Dr. Hapeman); Thedford; Broken Bow, Custer Co.; Knox Co.; Franklin; Arapahoe, Furnas Co.; Louisville, Cass Co.; Dismal River, Hooker Co. (Uni.).

C. bushii Britton should be noticed here as probably occurring in Nebraska. Dr. Britton so includes us in his

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range given in Appendix to his *Manual*, 1st ed. I find one sheet in the Seminar Herbarium contributed and named by the late Wm. Clebourne of Omaha, before *C. bushii* was known. The label reads thus: "*Cyperus esculentus* L. Sand flats south of Lake Manawa. Aug. 8, 1902." It is a fine specimen of *C. bushii* Britton, but we cannot claim it, as Lake Manawa is wholly in Iowa. Collectors in that part of the state will confer a great favor by hunting for it in similar situations.[1]

5. **C. acuminatus** Torr. and Hook. Annual; sand bars and other saturated soil. Valentine; Atkinson; Ewing (Bates); Minden; Edgar, Clay Co.; Lincoln; Franklin; Red Cloud; Loup City, Sherman Co. (Uni.).
6. **C. esculentus** L. Perennial; in sandy soil, wet and dry. Kennedy; Wood Lake, Cherry Co.; Ewing; Callaway; Red Cloud (Bates); Lincoln; Norfolk, Madison Co.; northern Holt Co. (Uni.).
7. **C. erythrorhizos** Muhl. Annual; in wetter soil than the last; not common. Ewing; Lincoln; Columbus; St. Paul (Bates); Lincoln; Norfolk; northern Holt Co. (Uni.).
8. **C. engelmanni** Steud. Annual; only in saturated soil. Kennedy, Cherry Co. (Bates). This rare species is in the

[1] Since writing up *Cyperus schweinitzii* and *C. bushii*, I have written to Dr. Rydberg, asking for the data upon which *bushii* was accredited to Nebraska in Britton's *Manual*. He kindly reported several sheets from the University collection and my own. I have gone over again all our material and find none, not even the Lake Manawa specimen, that bear out the contention. Ours have all degrees of roughness of culm and leaves, but none "smooth" according to the requirements of both Britton and Small. We have all forms of scale, cuspidate, acuminate and barely acute, chiefly 9-nerved. I am convinced that either this material should be included under one species not more variable than a thousand others, or else that we at least can lay no claim to it. Our specimen from Lake Manawa, Iowa, has lightly scabrous culms above and leaves strongly and finely serrulate and lightly scabrous above; scales strongly cuspidate, so that it can not come under the description of *bushii*. We have none without some serrulation on the leaves, and only two sheets that are without cuspidate scales. We find on the same plant scales obtuse, acute and cuspidate.

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Boardman swamp on the edge of stagnant water, less than a half a mile northwest of John Bachelor's old ranchhouse, two or three dozen plants, 3–8 inches high. I took Nelson S. Rowley, ranchman and County Commissioner, to identify the spot, so that other collectors might find it. August, 1910, 1911, 1912. Iowa does not report it. It is one of Nebraska's many good things.

9. **C. strigosus** L. Perennial; mostly in saturated soil; in many forms, perhaps the commonest species in the state. Valentine; Kennedy; Long Pine; Ewing; Columbus; St. Paul (Bates); Head of Dismal River; Thedford; northern Holt Co.; Nebraska City; Republican City (Uni.); Minden (Dr. H. Hapeman).
   a. var. **robustior** Kunth. Valentine; Ewing (Bates); Nebraska City (Uni.).
   b. var. **compositus** Britton. Kennedy; Long Pine; Ewing; Atkinson; Columbus (Bates).
10. **C. speciosus** Vahl. (*ferax* Rich.). Annual; ditches and low ground. Valentine; Kennedy; Red Cloud; Columbus; Crete (Bates); Lincoln; Republican River Valley (Uni.).
11. **C. filiculmis** Vahl. Perennial. In poor, dry, sandy soil. Minden (Dr. Hapeman); Kennedy; Ewing; Callaway; Columbus; Red Cloud (Bates); Lincoln; Nebraska City; Louisville; Hardy; Republican (Uni.).
   a. var. **macilentus** Fernald. Lincoln; Hardy (Uni.).

This is certainly the prettiest genus among the sedges, with its graceful forms and golden shades. I wonder that more of our students do not collect it and help add something to our pleasure and knowledge.

II. Dulichium L. C. Richard

1. **D. arundinaceum** (L.) Britton. Perennial. In saturated soil, even in the edge of standing water. Rare. Endicott, Jefferson Co.; Bow Valley, Cedar Co. (Uni.); Kennedy; Ewing (Bates).

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III. ELEOCHARIS R. Br. "Spike Rush"

1. **E. obtusa** (Willd.) Schultes. Annual. In mud holes. Rare. Nemaha, Nemaha Co. (Bates); Minden (Dr. Hapeman); Lincoln; Nebraska City (Uni.).
2. **E. engelmanni** Steud. Annual. In mud holes. Rare. Minden (Dr. Hapeman).
   a. var. **detonsa** Gray. Springview, Boyd Co. (Bates); Saunders Co. (Uni.).
3. **E. palustris** (L.) R. Br. Perennial. In saturated soil. Very variable. Chadron, Dawes Co.; Arabia, Cherry Co.; Springview; St. Paul; Red Cloud (Bates); Thedford; Cody's Lakes, Grant Co.; Lincoln (Uni.).

   My collections from Chadron, St. Paul and Red Cloud are absolutely flat stemmed and make as good a var. as many that are published. I shall call them here simply *forma compressa.*

   At Chadron this form occupies a basin of several acres, and is cut for hay whenever the season leaves the mud dry enough for teams. It produces a heavy crop and is highly esteemed.

   a. var. **glaucescens** (Willd.) A. Gray. Pauline (Dr. Hapeman); Anselmo, Custer Co.; Natick and Thedford, Thomas Co.; Sheridan Co.; Lincoln; Minden; Deuel Co. (Uni.); Glenn, Sioux Co.; Crawford and Bordeaux, Dawes Co.; Valentine; Kennedy; Long Pine; Arabia; Ewing (Bates). Our common form.

   forma **calva,** without bristles, in black alkali, Bassett, Rock Co.; Eli, Cherry Co. (Bates).

   The var. *glaucescens* is much more common than the species.

   For several years past, I have considered *glaucescens* a good species. But, upon getting all our material together, I find there is no absolute dividing line. It is an excellent var.
4. **E. acicularis** (L.) R. and S. Perennial. In saturated soil, mosslike, growing well but not fruiting under water. Minden (Dr. Hapeman); Valentine; Wood Lake; Atkinson;

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Merriman (Bates); Sheridan Co.; Thedford; Grant Co.; Deuel Co.; Anselmo; Lodge Pole, Cheyenne Co.; Knox Co.; Bellevue; Lincoln; Louisville; Nebraska City (Uni.).

The neatest specimens I have ever seen grew on the bottom of the mill pond at Atkinson. The pond was drained in June, about the 1st. July 30th I collected it in full bloom; August 21, in fully ripe fruit.

5. **E. acuminata** (Muhl.) Nees. Perennial by running rootstocks. In low meadows and higher sandy soil. Valentine; Kennedy, two localities several miles apart; Simeon; Arabia; Long Pine; Ewing; St. Libory, Howard Co. (Bates); Minden (Dr. Hapeman); Lincoln; Kearney Co. (Rydberg); Franklin (Uni.).

Some of our forms are hard to separate from *tenuis,* not having the culms flattened so much as squared and grooved. That from St. Libory is typical. A collection made August, 1912 at Kennedy has the stems nearly square and the fruit quite conical-tipped. Gray's seventh edition remarks: "perhaps a var. of tenuis." Perhaps two varieties of *tenuis.* Ours all have the acuminate scales, more so than the descriptions demand. This is the only absolute mark of separation from *tenuis.*

IV. Stenophyllus Raf.

1. **S. capillaris** (L.) Britton. Annual. In saturated soil, sand bars, etc. Minden (Dr. Hapeman); Atkinson; Ewing; Swan Lake; all in Holt Co. (Bates). My achenes vary in all three specimens, those from Ewing being *depressed* truncate, those from Atkinson probably normal.

V. Fimbristylis Vahl.

1. **F. castanea** (Michx.) Vahl. Perennial. In sandy soil, several feet above water. Quite variable under the glass. Newark, Kearney Co. (Dr. Hapeman); Valentine; Scotia, Greeley Co.; Loup City (Bates); Thedford; Scotts' Bluff and Horse Creek, Scotts Bluff Co.; Franklin (Uni.).

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a. var. **puberula** (Mx.) Britton. Callaway; Ewing (Bates). All my collections are more or less pubescent or scabrous and perhaps should come under the variety.

VI. Scirpus L.

1. **S. hallii** A. Gray. Annual. In moist, sandy soil, rare. Kennedy, Cherry Co.; southwestern Holt Co. (Bates). Undoubtedly is to be found in other localities.
2. **S. americanus** Pursh. (*pungens* Vahl.). Perennial. In shallow water and saturated soil. Valentine, Eli and Kennedy, Cherry Co.; Alliance, Box Butte Co.; Wood River, Hall Co.; Red Cloud (Bates); Thedford and Plummer's Ford, Thomas Co.; Anselmo, Broken Bow, Custer Co.; Aten, Cedar Co.; Hat Creek Basin, Sioux Co.; Lawrence Fork, Banner Co.; Franklin; Louisville, Cass Co.; Oshkosh, Deuel Co. (Uni.). Evidently all over the state.
3. **S. lacustris** L. (*S. validus* Vahl.). "Bulrush." Perennial. Chiefly in shallow water and marshes. Valentine; Callaway; St. Paul (Bates); Halsey, Thomas Co.; Thedford; Kiowa Valley, Scotts Bluff Co.; Newcastle, Dixon Co.; Talmadge, Otoe Co.; Nebraska City; Wahoo, Saunders Co.; Lincoln; Kearney, Buffalo Co.; Broken Bow, Custer Co.; Cherry Co., by Smith and Pound (Uni.); Newark (Dr. Hapeman).
4. **S. occidentalis** (Wats.) Chase. Similar, but longer spikelets and larger achenes. Kennedy (Bates); No. 22 collected by J. P. Sprecher. No locality. Probably in vicinity of Columbus (Uni.). I have included these two sheets here, because they answer the requirements of *occidentalis* in Gray's seventh edition. But I am convinced that it is a poor species, since the achenes vary much in shape and size, and one sheet has the long spikelets of this species and the small achenes of *lacustris*. It should be only a variety that could include all the forms with spikelets nearly 2 cm. long.
5. **S. heterochaetus** Chase. In Gray's seventh edition attributed to "Neb." There is none in our collection with "trigonous achenes."

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6. **S. campestris** Britton. Perennial. In and around shallow water. Alliance, Box Butte Co.; Lincoln (Uni.); Alliance; Kennedy, on Lone Tree Lake; Lincoln (Bates).
   a. **S. campestris longi-spicatus** nov. var. We have in the Uni. Seminar collection one sheet collected by P. J. O'Gara at Laurel, Cedar Co., with simple spikes of a soft silvery gray, heavily streaked with red, spikelets five, 2.5–3.8 cm. long; achenes as in *campestris*. The plant was cut below the two upper leaves, but what we have is normal. I would not like to name a new species from our incomplete plant, but this is so striking a likeness to *campestris* that I venture this varietal name tentatively. I intend to visit the O'Gara homestead this season and collect, if possible.
7. **S. fluviatilis** (Torr.) Gray. Perennial. In ponds and marshes. Kennedy; Merriman; St. Paul; Columbus; Grand Island; Scotia (Bates); Newark (Dr. Hapeman); Lincoln; St. James, Cedar Co.; Whitman, Grant Co.; Newark (Uni.).
8. **S. atrovirens** Muhl. Perennial. In low ground, swales but not marshes. Weeping Water, Cass Co.; Nemaha, Nemaha Co.; Beatrice, Gage Co. (Bates); Minden (Dr. Hapeman); Lincoln; Minden; Talmadge, Otoe Co.; 2 sheets by J. P. Sprecher, probably near Columbus (Uni.).
9. **S. pallidus** (Britton) Fernald. Similar. A fairly good species. Broken Bow; St. James, Cedar Co.; Hitchcock Co.; Thedford; Dismal River, Hooker Co.; Crawford, Dawes Co.; Nebraska City, Otoe Co.; Kiowa Valley, Scotts Bluff Co.; Wahoo, Saunders Co. (Uni.); Valentine; Loup City, Sherman Co.; St. Paul, Howard Co. (Bates).

   It has been interesting to see how this species and variety (so-called up to the latest manual) are distributed in Nebraska. *S. atrovirens* alone is represented in the southeastern corner of the state, crops out in the middle third of Kearney Co.—two distinct collections—and gives way to ***pallidus*** in the northeastern part of Cedar Co., and in all the western two thirds except Kearney Co. I have seen it in many

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other stations, easily identified by its olivaceous hue and compact head, but have failed to collect.

VII. Eriophorum L. "Cotton Grass"

All perennial; in bogs and springy, grassy ground

1. **E. gracile** Koch. (Roth. according to Gray's Man.). Lavaca, southwestern Cherry Co.; Simeon and Dewey's Lake, eastern central Cherry Co. (Bates); Dismal River, south of Thedford, Thomas Co. (Uni.); collected by Dr. Rydberg. This is all one region, and may define the limits of this species in Nebr. Iowa also reports but two counties.
2. **E. angustifolium** Roth. (*E. polystachyon* L. in part). Arabia, 16 miles southeast of Valentine, close by the railroad (Bates).
   a. var. **majus** Schultz. Kennedy, central Cherry Co. (Bates). Dr. Walker and companions found *angustifolium* at Simeon, west end of Dewey's Lake, in 1912. This will go into the Uni. collection.

VIII. Fuirena Rottb.

1. **F. simplex** Vahl. Perennial, but looking like an annual. Moist sandy soil. Minden (Dr. Hapeman); Platte River, Kearney Co.; Kearney, Buffalo Co.; 1 sheet by C. C. Engberg, who collected at Fremont on the Platte (Uni.). Not in Iowa list, but found at Stockton, Kas.

IX. Hemicarpha Nees and Arn.

1. **H. micrantha** (Vahl.) Britton. (*H. subsquarrosa* Nees.) Small annual in wet sand. Minden (Dr. Hapeman); Fremont, Dodge Co.; Cherry Co. (Smith and Pound); N. E. Neb. (Clements) (Uni.); Ewing; Long Pine (Bates). My Ewing specimens are 24 cm. long.
   a. var. **aristulata** Coville. Long Pine, Brown Co., on Long Pine Creek (Bates); with squarrose awns.

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X. Carex L.

Species all perennial; the largest and most difficult genus

Eucarex

1. **C. lupulina** Muhl. In swamps. Fremont Island in the Platte River, Fremont, Dodge Co., collected by Engberg (Uni.); Callaway (Bates).
2. **C. hystricina** Muhl. In saturated banks and swales. Halsey; Central City, Merrick Co.; Broken Bow; Aten, Cedar Co.; Thedford; War Bonnet Canon, Sioux Co.; Whitman, Grant Co.; Lincoln (Uni.); Ft. Robinson and Crawford, Dawes Co.; Valentine; Long Pine; St. Paul; Burwell; Red Cloud (Bates). All over the state.
3. **C. pseudocyperus** L. In bogs. In the Lake region of Grant Co., 20 miles south of Whitman (P. A. Rydberg only, Uni.).
4. **C. comosa** Boott. In bogs. On Gordon Creek north of Simeon P. O. about 4 miles, Cherry Co. (Bates); near Oasis P. O., Cherry Co. (R. J. Pool, Uni.).
5. **C. squarrosa** L. In bogs. Lincoln (H. J. Webber only, Uni.).
6. **C. trichocarpa** Muhl. In ditches and moist banks. Nemaha; Hastings (Bates); with the impressed nerves and glabrous perigynia of *deweyi* Bailey, and the length of spikes of the species; also Minden (Dr. Hapeman); Minden (Rydberg); Emerson, Dixon Co.; Nebraska City; this last with scales partly aristate (Uni.).
   a. var. **aristata** R. Br. Whitman, Grant Co. (Hapeman); Mullen (Uni.).
   a1. **aristata imberbis** Gray. Ashland, Saunders Co. (Uni.); Neligh, Antelope Co.; Arcadia, Valley Co.; Scotia, Greeley Co. (Bates);
   a2. **aristata confusa,** nova forma. Kennedy, Cherry Co. (Bates); 1 meter high, leaf 7.5 mm. wide, sheaths densely pubescent; perigynia hairy as in *trichocarpa,* teeth spreading, scales mostly aristate, spikes 7–9 cm. long.

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It is easily seen that this can not be placed under any described form; and it becomes equally evident that *one species* with two main varieties and other sub-species is a better treatment than the two species as given in Britton's Manual.

7. **C. riparia** Curtis. In swales and marshes; very dark green; taking the whole ground and making heavy hay, where not too wet to cut. Laurel, Cedar Co.; Otoe Co. (Uni.); Callaway, Custer Co.; Scotia, Greeley Co.; St. Paul, Howard Co.; Nemaha, Nemaha Co. (Bates). Probably to be found in several more stations.
8. **C. lanuginosa** Michx. (*filiformis latifolia* Boechl.). In swales and banks. Extremely common. Minden (Hapeman); Nebraska City; Thedford; Anselmo; Crawford; Pine Ridge, Sheridan Co.; Whitman (Uni.); Red Cloud; Ewing; St. Paul; O'Neill; Crawford; Harrison, Sioux Co. (Bates).
9. **C. parryana** Dewey. In the Platte meadows, a few feet above water. Rare; probably introduced from Wyoming by the waters of the Platte. Minden (Dr. Hapeman); Minden (Bates, under guidance of Dr. Hapeman).
10. **C. fusca** All. (*buxbaumii* Wahl.) (*polygama* Schkuhr.). In marshy ground; rare. S. W. Holt Co. and northeast of Newport at Kirkwood P. O., probably over the line in Holt Co. (Bates).
11. **C. stricta** Lam. In bogs and wet banks; very common in some form. Halsey; Norway, Thomas Co.; fairly typical (Uni.).
    a. var. **angustata** (Boott.) Bailey. Lincoln; Valentine; Minden; Emerson, Dixon Co. (Uni.); Merriman; Valentine; Johnstown; St. Paul (Bates); Minden (Hapeman).
    b. var. **decora** Bailey (*C. haydeni* Dewey). Minden (Hapeman in my herbarium; not in his specimens in University or Minden). The achenes are obovate, which is the only mark separating it from *angustata*.

The *angustata* type, varying greatly in style of scales and length of spikes, prevails throughout the state. In many

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specimens the scales are half obtuse and half lengthened-acute or acuminate. It should not be thought of as two species, for the forms are innumerable in this one state. A specimen sent in after this species was written up, collected in Grand Island, Hall Co., by Prof. C. J. Elmore, very young, has the almost orbicular achenes called for by *decora,* together with the lengthened scales. It was rightly named by the collector. It is simply another remarkable variation in this species, being quite unlike the Minden *decora* above.

12. **C. nebraskensis** Dewey. In saturated soil, spring holes and swales. Over all the western part of the state. Chadron, Dawes Co.; Kennedy, Valentine and Arabia, Cherry Co.; Callaway, Custer Co. (Bates); Sioux Co.; Pine Ridge, Sheridan Co.; Broken Bow and Anselmo, Custer Co.; Lawrence Fork, Banner Co.; Deuel Co.; Thedford and Halsey, Thomas Co.; Mullen, Hooker Co. (Uni.). One of my Kennedy collections, Aug. 1912, has nearly all the pistillate spikes staminate for one third of the upper end, a character that is given to *C. aquatilis* in the manuals. A very glaucous form is common, not noticed in manuals. The achenes of this interesting species vary from 3.5–4.25 mm. long, and from ovate to elliptic and obovate. The elliptic forms are from Arabia and Hat Creek basin.

13. **C. aquatilis** Wahl. In the marsh of Boardman Creek, Kennedy, Cherry Co., due west of the old John Bachelor Ranch House, in at least two large patches, covering many square rods (Bates, 1911, 1912). This marsh some 8 miles long and half a mile wide is the home of *Carex limosa* L., *C. aquatilis* Wahl., *Cyperus engelmanni* Steud., *Eriophorum angustifolium* Roth., *Caltha palustris* L., *Aster junceus* Ait., and other rare plants. Yet I have been the only botanical visitor for 24 years. It is worthy of exploitation by the best.

14. **C. limosa** L. In the mossy marsh of Boardman Creek, Kennedy, as above. Near *C. aquatilis* (Bates).

15. **C. davisii** Schwein. and Torr. Lincoln and Otoe Co. (Uni.).

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Britton says "moist thickets and meadows." A very pretty species; should be looked for in the other eastern counties.

16. **C. longirostris** Torr. On dry wooded slopes. Valentine; Long Pine (Bates); Nebraska City; "Bluffs of the Missouri"; Dismal River, Thomas Co. (Uni.). Also Halsey.
17. **C. grisea** Wahl. In rich woods. Nemaha (Bates); Pauline (Dr. Hapeman); Nebraska City; Crete, Saline Co.; Ashland, Saunders Co. (Uni.).
    a. var. **angustifolia** Boott. (*C. amphibola* Steud.). Nebraska City (Uni.). A very variable species. Our forms unite the characters of the species and variety in a way quite impossible to separate. One of the Nebraska City collections conforms so nearly to the variety that I have thought best to enter it there.
18. **C. granularis** Muhl. In low meadows. Kennedy; Burwell; Loup City; St. Paul; Red Cloud (Bates); Fremont; Plummer's Ford, Thomas Co. (Uni.). Long overlooked and doubtless more widely spread.
19. **C. crawei** Dewey. In similar situations, probably on a little higher ground. Merriman, Cherry Co.; Bassett, Rock Co.; O'Neill, Holt Co.; Burwell, Garfield Co.; Scotia, Greeley Co.; Loup City, Sherman Co.; St. Paul, Howard Co. (Bates); Minden, Kearney Co. (Dr. Hapeman); Valentine, Cherry Co.; Central City, Merrick Co. (Uni.).
20. **C. oligocarpa** Schk. "In dry woods and thickets." Nebraska City (Uni.); collected by J. J. Thornber only.
21. **C. tetanica** var. **woodii** (Dewey) Bailey. In low meadows. Minden (Dr. Hapeman); Oshkosh, Deuel Co. (Uni.), R. J. Pool, June 5, 1912. We need more searching for this plant. The material is not quite satisfactory.
22. **C. meadii** Dewey. In same soil as *crawei* and easily confused with it. A good species. Minden (Dr. Hapeman); Wood River, Hall Co.; O'Neill and Inman, Holt Co. (Bates); Crete; Lincoln; Nebraska City (Uni.).
23. **C. laxiflora** Lam. var. **gracillima** Boott. In dry thickets. Nemaha; wider leaves, 8 mm., Lincoln, west of Penitentiary; Red Cloud; Scotia; Bordeaux, Dawes Co.; Johns-

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town, Brown Co. (Bates); Lincoln; Hardy; "Prairies of the Missouri"; Plummer Ford, Thomas Co. (Uni.). These all have the "plump obovoid" perigynia with spikes too short and compact for the species.

a. var. **varians** Bailey. Long Pine; Valentine (Bates); Pauline (Dr. Hapeman); Nebraska City, several sheets from three collections (Uni.). These all have more ellipsoid-obovate perigynia, with upper spikes approximating. These divisions have to be forced more or less to receive our forms. The width of leaves seems to have little value. East and west cut no figure. I don't suppose any one else would have made exactly this alignment without consultation, but I am convinced it is as good as any other, and that is not satisfactory to me. I am willing some one else should tackle them.

24. **C. aurea** Nutt. In low meadows. Crawford; Valentine; Ft. Niobrara; Callaway; Loup City (Bates); Thedford (Dr. Hapeman); Pine Ridge; Hat Creek Basin; Thedford (Uni.). I have seen it in many places without collecting.

25. **C. setifolia** (Dewey) Britton (*C. eburnea* Boott.). On dry wooded slopes; rare. Merriman and Ft. Niobrara, Cherry Co.; Scotia, Greeley Co. (Bates); "Bluffs of the Missouri" (Clements) (Uni.). A beautiful species.

26. **C. pennsylvanica** Lam. Dry, sandy prairies and thickets. Valentine; Sargent; Long Pine; Red Cloud (Bates); Gordon; Thedford; Ponca, Dixon Co.; Deuel Co.; Crete; Nebraska City (Uni.). Very common and therefore neglected.

27. **C. varia** Muhl. Dry, wooded slopes; rare. Ft. Niobrara; Long Pine; Neligh, Antelope Co. (Bates).

a. var. **colorata** Bailey. Nebraska City, J. J. Thornber (Uni.).

28. **C. durifolia** Bailey (*backii* Boott.), var. nova *subrostrata.*

Perigynium subglobosum e basi producta, 4 mm. longum 2.1 mm. latum plus minus, non regulariter triquetrum; rostrum 1 mm. longum plus minus, crassum truncatum non hyalinum, apice cylindricuum; basis c. 1 mm. longa fulva;

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herbae 3 dm. altae robustae; folia viridissima pertinentia ad radicem, per hiemem semper virentia. Herbae abundantes in valle nemorosa ad Long Pine, Nebraskae.

Perigynium subglobose from a lengthened base, 4 mm. long, 2.1 mm. wide, more or less, irregularly triangular; beak 1 mm. long, more or less, stout, truncate, not hyaline, cylindrical at the apex; base about 1 mm. long, tawny; plants 3 dm. tall, vigorous; radical leaves very dark, evergreen throughout the winter. Plants abundant in the wooded canon near Long Pine, Nebraska.

I have collected this variety also at Valentine, Ft. Niobrara, and eight miles east at Parry's Falls, and at Merriman, sixty miles west of Valentine; thus extending the known range about 125 miles in Brown and Cherry counties. Specimens have been deposited in State University, Columbia University, Gray Herbarium and several private herbaria. My Quebec specimens agree perfectly with the cuts and descriptions of Boott., Gray and Britton and Brown.

In dry, sandy thickets and open places. May and June.[2]

29. **C. filifolia** Nutt. "Nigger head." On dry bluffs and open prairies, forming masses of black, wiry roots which when plowed will roll under the harrow and be on top of the soil for several seasons. Ft. Robinson; Valentine; Long Pine; Gordon; Butte, Boyd Co. (Bates); "Deuel Co. Rydberg" (Uni.). Probably the only reason this has not been collected more is because it blooms the first week in April and drops its fruit before collectors can get out on vacation work. Add Stratton, Hitchcock Co. (Hapeman).

VIGNEA

30. **C. stenophylla** Wahl. On high, dry prairies. Blooms at same time as *filifolia,* forming the earliest pasture. Craw-

[2] Since completing the description of *Carex durifolia subrostrata,* I have received a specimen of *C. durifolia* from Wyoming, by the courtesy of Prof. Aven Nelson. It agrees quite fully with the eastern form and leaves ours unique. Our achenes also have nearly twice the bulk of the Wyoming form. Ours would make as good a *species* as very many others.

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ford; Valentine; Johnstown; Long Pine; Kennedy; St. Paul; Loup City; Riverton, Franklin Co. (Bates); Minden (Dr. Hapeman); Oshkosh; Hardy; Franklin; Thedford (Uni.). Very common and widespread.

31. **C. douglasii** Boott. In like situations; rather rare. Crawford; Valentine; Kennedy (Bates); Sheridan Co.; Anselmo, Custer Co.; Halsey and Thedford, Thomas Co. (Uni.).

32. **C. stipata** Muhl. In saturated soil. Valentine; Long Pine; Red Cloud; Callaway; St. Paul (Bates); Thedford; Anselmo; Plummer's Ford; Halsey; Crete (Uni.).

33. **C. crus-corvi** Shufflw. In saturated soil. Nemaha (Bates); Lincoln (Uni.). Our coarsest species. Probably very rare, as it is quite fit for collection all summer.

34. **C. marcida** Boott. In dry soils, running down to low meadows. Very abundant in the western two thirds. Minden (Dr. Hapeman); Kennedy; Oasis, Cody, in Cherry Co.; O'Neill; Scotia; St. Paul; Red Cloud (Bates); Alliance; Anselmo; Broken Bow; Pine Ridge; Mullen; Thedford; Wiegand, Knox Co.; Franklin (Uni.). Usually dioecious; varying much in size and color of perigynia.

35. **C. teretiuscula** Gooden. In marshes, forming tussocks; rare. Simeon on Gordon Creek, on Geo. Beer's old claim (Bates). "On Middle Loup River, near Thedford," Rydberg, and a second sheet with no locality, but a different date (Uni.).

    a. var. **prairea** (Dewey) Britton (*C. diandra ramosa* (Boott.) Fernald). Burwell, in marsh of the North Loup, half a mile north of town (Bates). A good variety; hardly a species.

36. **C. gravida** Bailey. In dry woods and prairies; very common. Minden (Dr. Hapeman); Holly, Sheridan Co.; Valentine; Callaway; Lincoln; Red Cloud (Bates); Ponca; Diller, Jefferson Co.; Shelton, Buffalo Co.; Kearney Co.; Lincoln; Nebraska City; War Bonnet Canon, Sioux Co. (Uni.). Probably the most widespread species in the state, long confused with other species. Several of our sheets would fall under var. *laxifolia* Bailey, which is nothing but a

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protected, woodsy, long-leaved and long-stemmed form not worthy of distinction.

37. **C. vulpinoidea** Michx. In low meadows. Minden (Dr. Hapeman); Valentine; Scotia; O'Neill; Nemaha; Burwell; Callaway; St. Paul (Bates); Anselmo; Ponca; Talmadge and Syracuse, Otoe Co.; Elmwood, Cass Co.; Bloomington, Franklin Co.; Nebraska City (Uni.).
38. **C. sartwellii** Dewey. In moist hay meadows, not "in swamps" with us. Kennedy and Arabia, Cherry Co.; O'Neill and southwest Holt Co. (Bates).
39. **C. rosea** Schk. In dry woods. Lincoln; Nebraska City; Weeping Water; Ponca (Uni.); Nemaha (Bates).
40. **C. sparganioides** Muhl. In dry woods. Lincoln; Nemaha (Bates). Nebraska City (Uni.). It can be found in a pasture half a mile west of the Penitentiary.
41. **C. muhlenbergii** Schk. var. **enervis** Boott. In dry woods. Nemaha (Bates); Nebraska City; Lincoln (Uni.). J. G. Smith's Lincoln form has perigynia 4–5 mm. long. Thornber's sheet "1898" has them 3–4 mm.; his sheet "1899," both "Nebraska City," has them 3 mm.+. Mine from Nemaha have 3 mm. Otherwise they agree very well with the books, which say "3 mm."
42. **C. interior** Bailey (*C. scirpoides* Schk.). In spring holes and saturated grassy meadows. Middle Loup River, Thedford (Uni.); Valentine; Simeon; Burwell; Callaway (Bates).
43. **C. tribuloides** Wahl. In low meadows. Long Pine, Brown Co.; Ewing, Holt Co.; Lincoln, Lancaster Co.; Nemaha, Nemaha Co. (Bates). Rare.
44. **C. scoparia** Schk. In low meadows; common. Kennedy; Valentine; Long Pine; O'Neill; Arabia; Minden (Bates); Ewing; Thedford; Grand Island (Uni.).
    a. var. **condensa** Fernald. Springview; Ewing (Bates).
45. **C. cristatella** Britton (*C. cristata* Schwein.). Low hay meadows, and borders of bogs; not common. Wabash, Cass Co.; Nebraska City; Lincoln; "Bluffs of the Missouri," N. E. Neb. (Uni.); Long Pine; Ewing; Norfolk; St. Paul; Burwell; Weeping Water; Neligh (Bates). My

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collection of Sept. 16, 1893, Neligh, Antelope Co., on the banks of the Elkhorn River, is magnificent in size, color and squarrose perigynia. March 26, 1910, I collected the sterile, leafy culms of 1909 at St. Paul, Neb., *growing* at top and side shoots, and have them mounted. They had shot out 1–2 inches of green growth.

46. **C. mirabilis** Dewey. One over-ripe sheet from Nemaha must go here (Bates).

    C. mirabilis Dewey var. **perlonga** Fernald. Dry woods. Nebraska City (Uni.); J. J. Thornber, only 1 sheet. I have a sheet from Central Michigan that agrees well with this.

47. **C. straminea** Willd.

    var. **echinodes** Fernald. "Kearney, Islands of Platte River, July 20, 1901" (Uni.), J. J. Thornber. A fine sheet. It is a pity we have not more of it.

48. **C. festucacea** Willd. In dry soil, extending to the margin of swales, Minden (Dr. Hapeman); Franklin; Hitchcock Co.; Halsey (Uni.); Nemaha; Valentine; Beatrice (Bates). My Beatrice collection and one sheet from Nemaha might pass for *suberecta* (Olney) Britton, on account of width of perigynia, but the description of scales does not call for any change. I doubt the necessity of the new species. *C. festucacea* is an extremely variable species, but the variations can be found on the same plant, as in species of Crataegus.

    a. var. **brevior** (Dewey) Fernald. Nebraska City; Lincoln; Ponca; Anselmo; Kearney Co. (Uni.); Arabia; O'Neill; Long Pine; Ewing (Bates). A variety of no importance, as it is quite uncertain under which head to put some of our forms. Perhaps the most universal species in the State.

49. **C. bicknellii** Britton. In low meadows. O'Neill and Ewing, Holt Co.; Weeping Water, Cass Co. (Bates).

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III.—PHASE CHANGE BY REFLECTION—PRIMARILY IN THE ULTRA-VIOLET*

BY OLIVER H. GISH

The first quantitative investigation of absolute phase change was made by Quincke[1] in 1872. This was followed by that of Wernicke,[2] Wiener,[3] Glan,[4] Hennig,[5] Drude,[6] Koenigsberger and Bender.[7] All these investigations were confined to the visible spectrum except that of Koenigsberger and Bender, who, in addition, measured for a few substances the phase change in the infra-red. So far no measurements of this phenomenon have been made in the ultra-violet.

Quincke used a total reflecting prism, a portion of whose reflecting surface was silvered. Light from a *point source, when reflected by this prism,* showed interference bands due to the difference in phase of the waves reflected from the silver and those reflected from the glass. He observed variations in these bands with the angle of incidence, and also with the plane of polarization. From measurements of the width of these bands he arrived at values for the phase change from silver relative to that from glass. The complexity of this method made it unsatisfactory.

Wernicke devised a simpler method by which he measured the phase change of silver and several dyes. In this method a thin, plane, parallel plate of glass was so mounted that white light reflected from it, entering a spectroscope, produced a spectrum that showed vertical light and dark bands. The bands from the

[1] G. Quincke, *Pogg. Ann.*, 142, p. 192, 1872.
[2] W. Wernicke, *Pogg. Ann.*, 142, p. 192, 1876.
[3] O. Wiener, *Wied. Ann.*, 31, p. 629, 1887.
[4] P. Glan, *Wied. Ann.*, 7, p. 640, 1879; *Wied. Ann.*, 47, p. 252, 1892.
[5] R. Hennig, *Gött. Nachr.*, 13, p. 365, 1887.
[6] P. Drude, *Wied. Ann.*, 50, p. 595, 1893; 51, p. 77, 1894.
[7] J. Koenigsberger u. R. Bender, *Ann. d. Phys.*, 26, p. 763, 1908.

* Published also in *The Physical Review.*

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silvered portion of the plate showed a shift relative to those from the unsilvered part. From the relative shift the phase change was determined.

Wiener later by this method studied silver and obtained results that were in marked disagreement with those of Wernicke.

The work of these men was followed by a more exhaustive study, both theoretical and experimental, by Drude. In his measurements Drude used a wedge of glass so thin that it showed interference bands when illuminated by monochromatic light. The shift of the bands was then measured with a cathetometer. His measurements were in close agreement with those of Wiener and he suggested that the lack of agreement with Wernicke was due to the difference in the silver films.

It was known to Wernicke that the phase change varied with the thickness of the silver film, and he made use of this in an attempt to determine the direction of the shift of the interference bands, but Wiener was the first to make an extended study of the variation of the phase change with the thickness of the silver film. He found that with increasing thickness, the phase change increased until a full silver was obtained after which it remained constant, with a value approximately that for massive silver. In addition to the work on thick films Drude investigated films of varying thickness and obtained results that were in close agreement with those of Wiener. To explain this phenomenon he assumed that over the reflecting surface of the silver was a very thin film (about one four-hundredth of a wave-length in thickness) having abnormal optical constants. Then when the silver film is sufficiently thick the light reflected from the normal silver back of this thin film is the more intense and consequently the effect of the latter is not observed.

Koenigsberger and Bender repeated the work of Drude with modifications designed to avoid surface films, and obtained results for gold and platinum, supposedly free of films, that were similar to those of Drude for silver with the assumed films. Hence they questioned the validity of Drude's explanation, suggesting rather, that instead of applying, as Drude did, a system of equations in which multiple reflections are neglected, more general forms such

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as the fundamental equations used for Hertzian waves should be applied in developing the theory.

METHODS

The methods that may be employed for determining the phase change produced by reflection from the surfaces of metals and some other regularly reflecting substances are of two general classes:

1. *Polarimetric Methods.*—Methods of this class are not direct but require an application of the theory to determine the phase-change. The theory has not yet been sufficiently tested to accept its results as conclusive, and consequently more direct methods are desirable.

2. *Interferential Methods.*—Of these, the method of O. Wiener[8] and that of G. Sagnac[9] are the only direct ones. All other interferential methods are indirect, yet because of their greater convenience, they have been the more generally used.

The Indirect Methods.—If a sufficiently thin wedge-shaped piece of glass is illuminated with monochromatic light a series of interference bands, due to the interference of waves reflected from its front and back surfaces, may be observed over the plate. If now the back of the plate be coated with some substance, for example, silver, the effect is to shift the interference bands from their original position toward the thinner or thicker portion of the wedge, according to whether the phase change is a retardation or an *acceleration.*

By stripping off, then, a portion of the coating in a direction at right angles to the bands, two sets of bands are obtained. Their relative displacement serves as a measure of the relative phase change. The phase change by reflection from transparent substances has been thoroughly studied, and theoretically the light (electric vector) suffers no change of phase upon the reflection from air into glass. Accepting this, measurements with the above wedge should give absolute phase change in the transparent region for glass.

[8] O. Wiener, *Wied. Ann.*, 40, p. 203, 1890.

[9] G. Sagnac, *C. R.*, t. 154, p. 1346–1349, May, 1912.

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A glass plate having parallel faces should show no interference bands when illuminated with monochromatic light from a broad source; but when white light reflected from it is dispersed by a spectroscope a series of vertical bands extending throughout the spectrum, in ordinary working conditions, may be observed. These bands arise from the fact that waves, of such length that their effective path in the plate is an odd number of half wave-lengths, produce destructive interference in the reflected light. A set of bands from the coated part of the plate and a set from an adjacent uncoated part will be shifted relative to each other. The magnitude of the phase change may be determined from this shift.

The latter method is essentially that of Wernicke; the former that used by Drude, and by Koenigsberger and Bender. Both have been used in the present work.

First Method.—Because of the convenience of obtaining thin parallel plates mica was used in part of the work, but other advantages led finally to the use of thin wedge-shaped plates of glass. The substances investigated for phase change were silver, fuchsin, döppel-grün, crystal-violet, cyanin, eosin and aniline-orange.

First Method

In the observations with mica the following plan was followed. A mica plate coated, except for a central strip, with the substance to be tested, was so mounted (Fig. 1), that a source (s) was

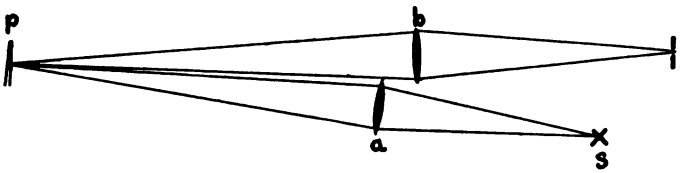

FIG. 1.

focused by means of a quartz lens (a) upon the mica (p) at a small angle of incidence (about 2.5 degrees). Then, by means of another quartz lens (b) an image of this plate by the reflected light

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was cast on the slit of a four-foot Rowland grating spectroscope. This method requires a source giving a continuous spectrum. Sources fulfilling this requirement and also giving sufficiently intense radiation in the ultra-violet were not available. With a Nernst glower and with exposures eight hours in duration it was found that the limit into the ultra-violet to which observations could be extended was 340 $\mu\mu$.

Second Method

For most of the measurements the following method was used which, since it made possible the application of a discontinuous spectrum, permitted measurements to be extended farther into the ultra-violet region.

Thin glass wedges were selected from several boxes of cover slips and from a small supply of thin glass plates that were at

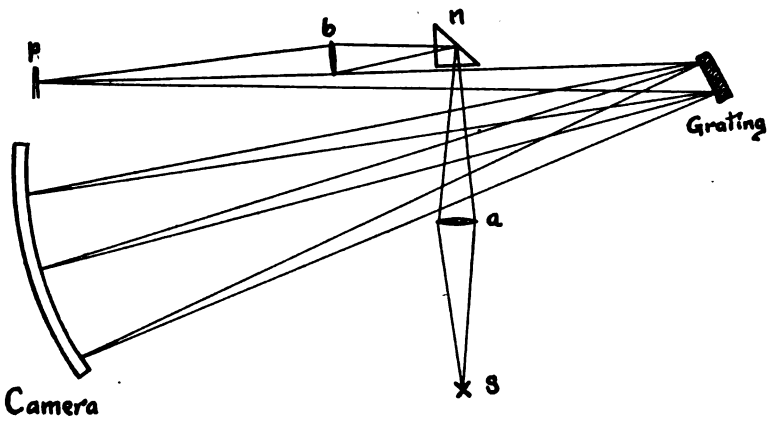

FIG. 2.

hand, all being discarded that failed to show straight bands of sufficient breadth when illuminated by monochromatic light. The breadth of band that gave the best photograph in the shorter wavelengths was found from a few trials. These were then coated on the back with the substances whose phase change was to be investigated. Then a strip of the coating was removed in a direc-

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tion at right angles to that of the bands. At first the glass wedge was simply substituted in place of the mica plate, of the method described above, and the slit of the spectroscope opened to a width of about 4 mm. With the copper arc as a source, images of the slit were distributed throughout the spectrum, each showing a set of from three to six bands depending on the wave-length. Due to the chromatism of the quartz lens only a limited portion of the spectrum was in focus at a time, so to avoid this the glass plate itself was diaphragmed down to an aperture of 4 by 10 mm. and mounted in place of the slit of the spectroscope (Fig. 2). By means of two quartz lenses (*a* and *b*) and a total reflecting quartz prism (*n*) an image of the arc was formed on this, the light being incident as before at an angle of about 2.5 degrees. When properly adjusted all the images of the set of bands were found well defined. Photographic records were obtained upon heavy films of such length as to include the first order spectrum and a large portion of the ultra-violet region in the second order. The displacement of the bands was measured with a micrometer microscope.

Method of Measurement

The difficulty of finding glass plates giving perfect bands was one source of error. To eliminate as much as possible that arising from the curvature of the bands, the cross line of the microscope was first adjusted tangent to some band of one set, and measurements of the shift of all the bands in the set then made. It was then adjusted tangent to a band of the opposite set and the series of readings again taken. Each of these series of readings was repeated, the respective adjustments being on another band of each of the two sets. The mean of these four sets of readings should be practically free of the error arising from curvature, provided that curvature is not abrupt and the points on the bands on which the settings are made are not too far from the line of division of the two sets. The first condition depends on the selection of the glass plates; the second on the care observed in making the settings. A small region between the two sets of bands, owing to the astigmatism of the grating, was not well defined. This necessitated setting on points that were somewhat removed from the real line of

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division. However this should in no case have caused a greater error than one per cent. The accuracy with which a setting on the center of a band could be repeated depended largely upon the intensity of the photograph.

Method of Depositing Films

The silver films used were deposited by Brashear's method and were of such density that only a trace of light could be seen on looking through at the bright sky.

In obtaining films of the dyes, these were first dissolved in absolute alcohol and as concentrated a solution was used as could be dried on the plate without the substance crystallizing. The plates were coated by dipping them in the solution and quickly drying over a Bunsen flame. Considerable difficulty was met in obtaining coatings of heavy and uniform thickness. This lack of uniformity in the coatings is the cause of some irregularities observed in the measurements. In the region of the spectrum where the substance is most transparent distortions of the bands probably arising from this cause could usually be observed.

Thickness of Films

Some measurements of the thickness of the films used were made as follows: Interference bands formed by laying another glass plate on the coated side of the plate holding the film to be measured showed a shift between the bands over the coated portion and those over the cleared portion of the plate. This shift was measured for two wave-lengths far enough apart so that a measureable difference in path in wave-length could be observed. The shift of the bands due to the thickness of the coating was measured in the direction in which their gain over those from the coating surface took place, as light of shorter wave-length was used. By varying the wave-lengths of the light illuminating the plate it was readily seen that the thickness was in all measurements less than a wave-length, provided the phase change be neglected. Since fuchsin is very transparent in the red its phase change there should be the same approximately as that of glass, provided its refractive index is greater than one. Under this assumption, that

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the phase changes from glass in air and from fuchsin in air are the same for the red, the relative shift of the bands is a direct measure of the thickness of the film. Values obtained by this method from adjacent parts of one film were 275 and 333 $\mu\mu$. The films of eosin and aniline-orange were so thin as to show Newton's colors.

Observations

Silver.—The photographs taken for silver on mica showed a relative shift of about three tenths of a band at 580 $\mu\mu$, decreasing slowly with decreasing wave-length to about 542 $\mu\mu$ where the two sets of bands seem to coincide. The shift with silver on glass was practically the same as for mica except that the position at which the bands coincide seemed to be shifted farther toward the ultra-violet (to about 390 $\mu\mu$). They continued to coincide throughout the transmission region for silver and as far as the photograph showed distinct bands (296 $\mu\mu$). Because of the high reflection coefficient of silver the silvered portion did not give well-defined bands in the greater part of the spectrum. The accuracy with which these could be measured did not justify more than qualitative observations.

Drude's formula[10] for the absolute phase change (Δ) at the boundary between a transparent medium of refractive index (n_1), and an absorbing medium having an index of absorption (k) and an idex of refraction (n) is:

$$tg\Delta = -\frac{2nn_1k}{n^2 - n^2k^2 - n_1^2}$$

From this formula, values for the relative phase change were calculated from values for n and k obtained by Minor.[11] These were in close agreement with the observed values for the red, but, being practically constant down to about 320 $\mu\mu$, they are in very poor agreement with the observed values at the shorter wave-lengths. In the region where the bands coincide the calculated values ranged from .38 for 326 $\mu\mu$ to .32 for 275 $\mu\mu$. Minor's observations however were made on massive silver, mine on parti-

[10] P. Drude, *Wied. Ann.*, 51, p. 87, 1894.

[11] Minor, *Ann. d. Phys.*, 10, p. 617, 1903.

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ally transparent films. The experiments on the variation of phase change with thickness of the film would hence lead one to expect poor agreement in the region of the spectrum where the substance is transparent.

Fuchsin.—The measurements on fuchsin (Table 1, Fig. 3)

TABLE 1

Fuchsin

Wave-length	Phase Change	Wave-length	Refractive Index of Fuchsin
577.8	0.39	589	2.64 to 2.70
568.5	.38	527	1.85 to 1.91
521.8	.33	486	1.05 to 1.07
510.6	.33	461	0.83
465.1	.26	431	0.95
424.0	.00		
406.3	.60	425	1.00
402.3	.57	413	1.15
382.7	.51	405	1.18
353.0	.39	399	1.24
333.8	.43	397	1.32
296.1	.31	360	1.52
282.3	.27	344	1.60

show a decreasing phase change for decreasing wave-length until between 420 and 440 $\mu\mu$ where coincidence, or at least a minimum phase change, is observed. Beyond this point the phase change suddenly mounts to its highest value, after which a gradual decrease is observed to 280 $\mu\mu$ where its value is .27 wave-length. The transmission region for this fuchsin film was determined by mounting it before the slit of the spectroscope so that a portion of the light falling on the slit went through the film and the glass plate, while the other passed through the glass plate only. By comparing these two portions in the photograph, it was observed that between 440 and 320 $\mu\mu$ fuchsin was practically as transparent as glass. The abrupt change in phase difference at 420 $\mu\mu$ from zero to one half wave-length evidently arises from the refractive index of the fuchsin, which is less than glass at 425 $\mu\mu$, rising above it between 425 and 410 $\mu\mu$.

Doppel-Grün.—The value for the phase change at the surface of this substance goes through two minima in the portion of the

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spectrum here investigated (Table 2, Fig. 2). The transmission of this film was determined in the same way as for fuchsin, and it was found that between 495 and 487 $\mu\mu$, and between 389 and

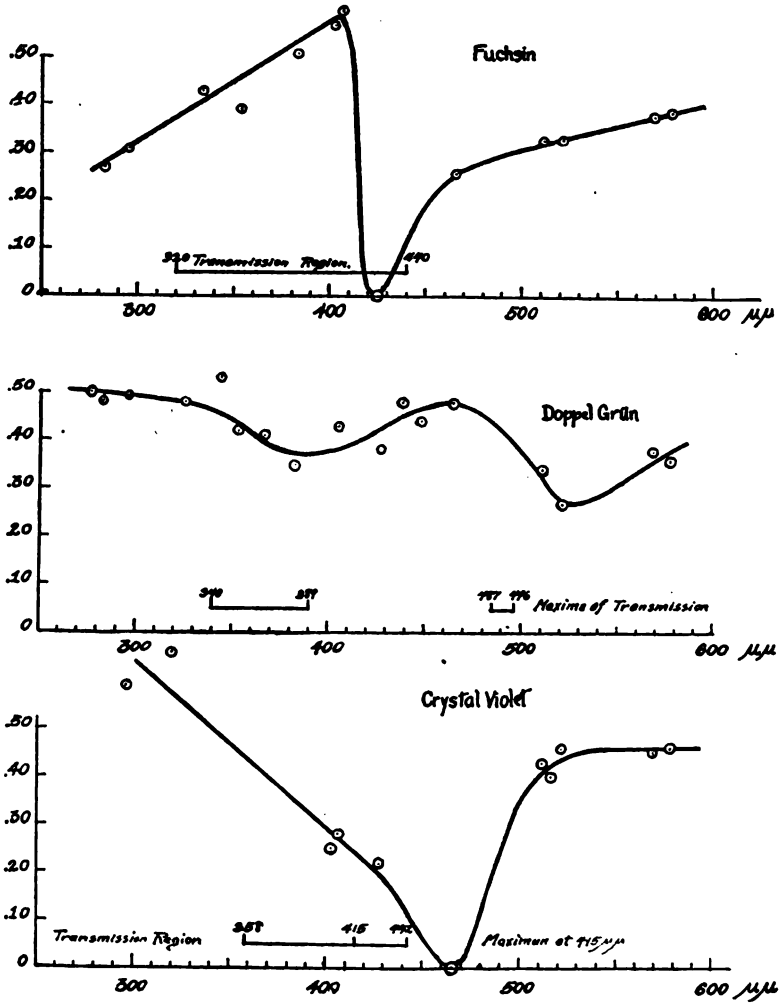

FIG. 3.

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340 were maxima of transmission. The magnitude of the transmission was considerably less than that for glass.

Crystal-Violet.—For this substance the phase change (Table 3,

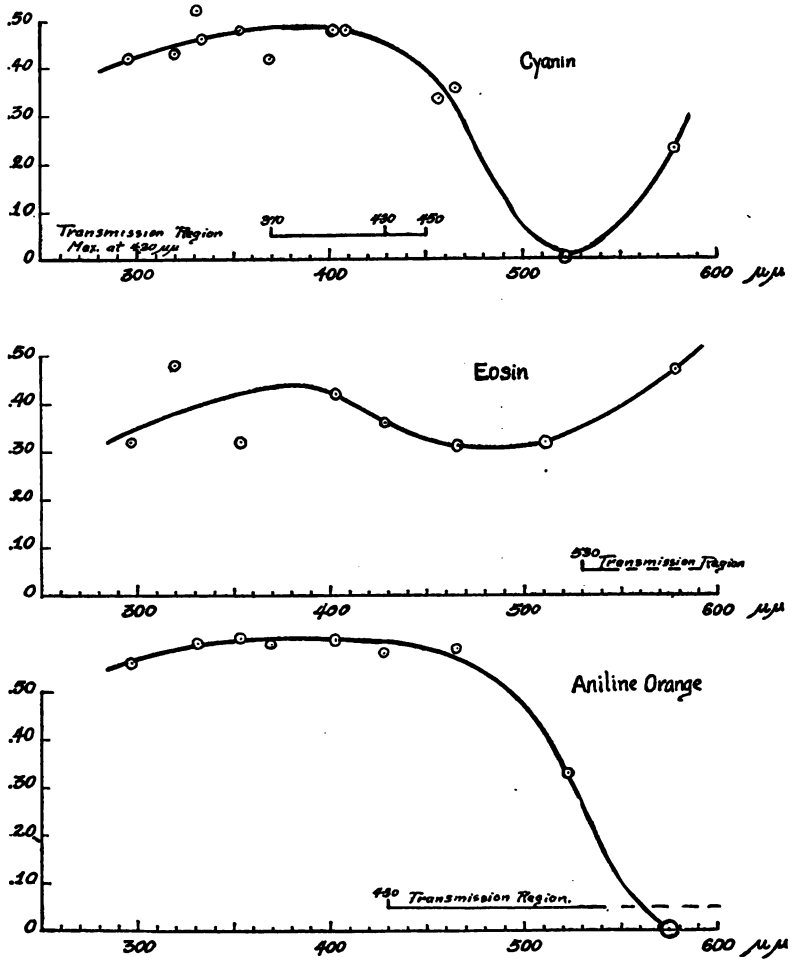

FIG. 4.

Fig. 3) decreases gradually from about .5 of a wave at 580 to a minimum, approximately zero, at about 460 $\mu\mu$, then from this

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point on gradually increases to a value of about .6. Its transmission region extends from 442 to 358 $\mu\mu$ with a maximum at about 415 $\mu\mu$. The degree of transmission was between that of doppelgrün and glass. Here the minimum phase change falls near the upper end of the transmission region.

TABLE 2

Doppel-Grün

Copper Arc		Nernst Glower	
Wave-length	Phase Change	Wave-length	Phase Change
577.8	.36	580	.34
568.5	.38	570	.25
521.8	.27	560	.25
510.6	.34	550	.28
465.1	.48	540	.23
448.0	.44	530	.21
437.8	.48	520	.21
427.5	.38	510	.20
406.3	.43	500	.18
382.4	.35	490	.18
367.1	.41	480	.30
353.2	.42	470	.39
344.2	.53	460	.45
326.0	.48	450	.47
		440	.41
296.1	.49	430	.35
283.0	.48	420	.35
276.7	.50	410	.39

Cyanin.—The transmission for cyanin extended from 450 to 370 $\mu\mu$, with a maximum at about 430 $\mu\mu$ where it appeared to be as transparent as the glass. The minimum phase change (Table 3, Fig. 4) is not so near the maximum of transmission as in the case of the other substances tested. Considerable difficulty in obtaining a coating of cyanin was had and the film here used was more granular in appearance than was the case with the other substances.

Eosin.—The film of eosin used showed but little transmission for the portion of the spectrum recorded photographically except very slightly in the red above 530 $\mu\mu$.

Aniline-Orange.—Absorption for this substance becomes evident at about 430 $\mu\mu$, when it increases rather abruptly, being

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nearly complete below 415 $\mu\mu$. The region above 430 $\mu\mu$ as far as recorded is nearly as transparent as the glass plate. The films of both cyanin and aniline-orange gave Newton's colors in reflected light.

TABLE 3

Phase Change

Wave-length	Crystal-violet	Cyanin	Eosin	Aniline-orange
577.8	0.46	0.23	0.52	0.00
568.2	.45	—	—	—
521.8	.46	.00	—	.33
515.3	.40	—	—	—
510.6	.43	—	.32	—
465.1	.00	.36	.31	.59
456.4	—	.34	—	—
427.5	.22	—	.36	.58
406.2	.28	.48	—	—
402.3	.25	.48	.42	.61
368.7	—	.42	—	—
353.2	—	.48	.32	.61
333.4	—	.46	—	—
330.8	—	.52	—	.60
319.3	.66	.43	.48	—
296.1	.59	.42	.32	.56

In general the results obtained leave much to be desired in accuracy of measurements; however, in all cases the form of the curves seems to be fairly well established.

In conclusion the writer wishes to thank Professor Skinner for suggesting the problem and giving many other helpful suggestions in the course of this investigation.

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IV.—ON A NEW FOSSIL FUNGUS FROM THE NEBRASKA PLIOCENE

BY A. C. WHITFORD

While studying the fossil woods of Nebraska, under the direction of Dr. E. H. Barbour, it was my good fortune to find an interesting specimen. This specimen is in the collection of fossil woods in the Nebraska State Museum, and was collected by Dr. Barbour from the Pliocene, or Snake Creek beds, about 20 miles south of Agate, Nebraska, during the summer of 1911.

The specimen itself is about six inches long by four inches wide and two inches thick. It has the appearance of typical agatized wood, but has numerous limonite streaks running through it. Upon sectioning the specimen, there was no woody structure to be seen, except very isolated cells of resistant tissue, such as the separate cells of tracheae. It showed all the signs of complete decomposition save in exceptional places. From a series of sections, it seems that the specimen is an Angiosperm of the diffuse porous type, but no further classification is possible.

Many spores and hypha were found upon closely examining the sections to ascertain the cause of the decomposition. These were in a nearly perfect state of preservation, and showed the various phases of the fungus in an excellent manner, save that the cell walls were slightly crinkled. It was also observed that the spores were generally in the brown streaks, although a few were found in clear parts. On the other hand, hypha were common in the clear parts of the specimen.

The structure of the fungus at once suggested that of *Cladosporium,* and close comparison established the similarity. Dr. Felix has described a specimen of *Cladosporites,* which he says is very closely related to the *Cladosporiums.* He has called this species *Cladosporites bipartitus* from the fact that all of the spores were two-celled. His description is as follows: " Conidia, elliptical

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or pyriform. From .0102 to .0119 mm. long and from .0051 to .0068 mm. wide. Smooth, brown, divided into two parts by a septum, the upper round, and the other roundish-pyriform. The filaments of the mycelium are septate and ramifying, and at these places are protuberances upon which the conidia are formed. No conidiophores are known." This plant was found in the Eocene of Austria in a specimen of *Helitoxylon roemeri*. The description of the above shows it to be similar in the main features to the one under consideration. The differences may be noted from the following description:

Cladosporites ligni-perditor, sp. nov.

Hypha.—Septate branched, some of the branches smaller. Color, clear brown. The upper ends, where the conidiophores are attached, are swollen. The cells of the smaller hypha are .023 to .029 mm. long and from .021 to .023 mm. wide. The larger hyphal cells are from .0044 to .0046 mm. wide and from .03 to .046 mm. in length. See Plate I, figs. 1 and 2.

Conidiophores.—Septate nodulose, and of a clear brown color. These are common and serve as a mark of distinction, or else the specimen under consideration is a more complete plant than that described by Dr. Felix. See Plate I, figs. 3 and 4.

Spores.—Two kinds. First, one-celled. These are globose or elliptical, smooth, of a light brown color, and grow in chains. Length .0046 to .0115 mm. and width from .0023 to .0069 mm. See Plate II, figs. 1, 2 and 3. Second, two-celled spores. Divided near the middle by a septum, upper part globose, lower triangular to triangular-globose. Smooth and clear brown. These were not found in chains. Length from .0161 to .0253 mm. and breadth from .0069 to .0115 mm. See Plate II, figs. 5, 6 and 7. In the modern genus, the one-celled spores are formed by a breaking up of the two-celled. This may perhaps be found in the fossil species, as shown in Plate II, fig. 4*a*, *b*, and *c*, which seems to show progressive stages of division.

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COMPARISON WITH CLADOSPORITES BIPARTITUS FELIX

	C. bipartitus	*C. ligni-perditor* sp. nov.
One-celled conidia—Absent		Present
Two-celled conidia, length	.0102–.0119 mm.	.0161–.0253 mm.
Two-celled conidia, width	.0051–.0068 mm.	.0069–.0115 mm.

Hypha in both are the same, although more complete in c.

Acknowledgments are due to Doctors Barbour, Bessey, and Walker for suggestions, and for placing material and equipment at the disposal of the writer.

EXPLANATION OF PLATE I

FIG. 1. Large hypha with conidiophores, *a*.
FIG. 2. Large and small hypha, branching with one-celled spores, *a* and *b*.
FIGS. 3 and 4. Conidiophores.

EXPLANATION OF PLATE II

FIGS. 1, 2 and 3. One-celled spores singly, and in chains.
FIGS. 4, 5, 6 and 7. Two-celled spores.
FIG. 4*a*, *b* and *c*. Showing one-celled spores produced by the breaking apart of the two-celled forms.

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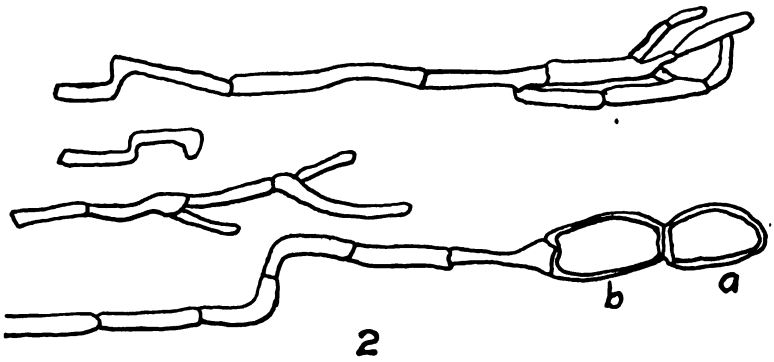
PLATE I.



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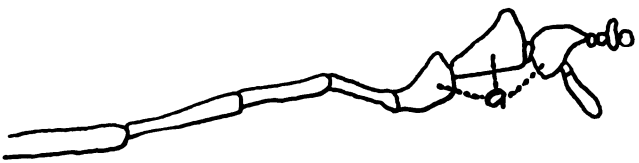

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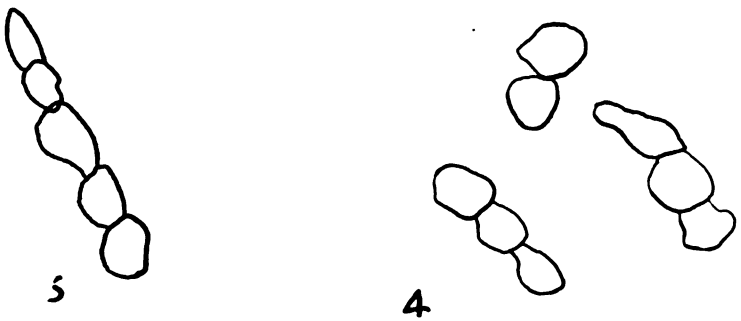

5 4

CLADOSPORITES LIGNI-PERDITOR, Sp. Nov.

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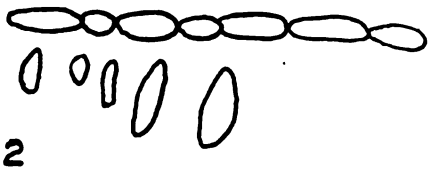
PLATE II.

3



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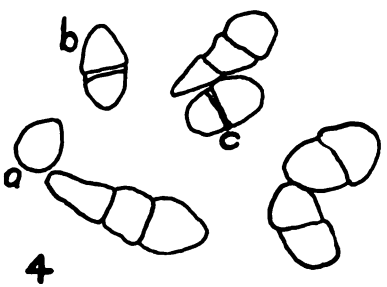
7



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CLADOSPORITES LIGNI-PERDITOR, Sp. Nov.

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V.—MAMMALIAN FOSSILS FROM DEVIL'S GULCH

BY ERWIN H. BARBOUR

The fauna of the beds at Devil's Gulch and vicinity is rich and varied, and promises to fill certain gaps in the Pliocene and early Pleistocene, where investigation seems especially desirable. The object of this paper is to make a partial faunal list and to describe two new proboscideans and a new equine.

ANCESTRAL PROBOSCIDEANS

The genealogy of this group is now so well known to naturalists, that it is interesting to note in the writings of Cope and others of twenty-five years ago, that the intermediate proboscideans are entirely lost, and the phylogeny of the order absolutely unknown. As a reward of zeal, the genetic gaps are being filled so rapidly, that ultimately knowledge of the history of the Proboscidea must be as well known as that of the Equidae. The affinities of the Proboscidea are with the Rodentia and Sirenia.

The oldest known progenitors of the Proboscidea are *Moeritherium* and *Palaeomastodon*. *Moeritherium* occurs in the Upper Eocene, and *Palaeomastodon* in the Lower Oligocene of Egypt, so Africa is accounted the birthplace of the group. After centuries of change their migrations took them throughout Africa, northward into Europe and the British Isles, into Euro-Asia, India, and Siberia, thence across the Siberian-Alaskan Isthmus of that time into North America, and by the Isthmus of Panama into South America. Thus they became world-wide in distribution.

During the ages required for these mutations and migrations, many degrees of specialization resulted.

THE SKULL

While the trunk and tusks were developing until they became ponderous, the superficial area of the skull was also increasing.

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Otherwise there would not have been the extent of surface necessary for the attachment of muscles and ligaments to carry the ever-increasing load. This expanse of surface was brought about by the inflation of air cells in the cancellous tissue. This structure not only surrounds the brain, but extends into the maxillae, zygomatic arch, and other parts of the skull.

At first the proboscis was small, but little more than a prehensile lip, much like that of the horse, and used in much the same way, to guide food into the mouth. In the later mastodons, mammoths, and modern elephants, perfection of specialization was attained by this remarkable organ. This too added to the weight of the skull.

THE MANDIBLE

The lengthening and subsequent shortening of the mandibular tusks was paralleled by the lengthening and subsequent shortening of the mandible itself. The remotest known ancestor of the group had mandibles of a typical mammalian form, which in successors became increasingly atypical. As the mandibular tusks developed, mastodons became longirostral to the last degree. The symphysial prolongation, which was extreme in *Mastodon angustidens,* is reduced in the mammoths and present elephants to a mere process on the front of the jaw.

THE TEETH

The ancestral proboscidean had a number of teeth, after the manner of typical mammals, and these were erupted in the usual way, that is by new teeth pushing upward and gradually displacing the old. These are called teeth of vertical succession. But incident to progressive change, and extreme specialization, the teeth of mastodons and mammoths became too large for the jaw to accommodate many at a time, and finally the dentition was reduced, in fully matured adults, to one large specialized tooth in each jaw. These teeth were erupted in a singular manner, that is, by the one behind crowding forward, and pushing out the one in front. This is known as the horizontal succession of teeth. Ac-

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PLATE I.

General View of Devil's Gulch. Looking up the canyon. Quarry No. 1 is at *a*.

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PLATE II.

Nearing the Brink of the Canyon. Dragging out, by means of block and tackle, a slab containing the skull of *Tetrabelodon willistoni*. Quarry No. 2 is at *a*.

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cordingly, the anterior cones and plates of mastodons and mammoths are ground in front long before they are worn behind.

The mandibular teeth of mastodons are ground most in front, and generally with an outward slant. This gives a clue to the orientation of odd mastodon teeth. The mandibular teeth of mammoths are roughly crescentic, the ground or worn surfaces are upward and forward, and the convexity inward, which enables one to orient and locate a given tooth. The maxillary teeth of mammoths are generally massive, the grinding surface is downward, and the greater convexity of surface outward.

Though the more advanced and specialized proboscideans have the number of grinding teeth reduced to one or two, they may have had, at some earlier stage in their life, four or five in use at once. This points to an ancestry with many grinders. The short-crowned (brachydont) teeth, with but three, four, or five transverse ridges, changed to the tall-crowned (hypsodont) teeth with ever-increasing transverse ridges found among the intermediate and true elephants. Increase in number of ridges signifies advancement. The earlier mastodons had 3 transverse ridges, later mastodons 4 or 5. The intermediate elephants, Stegodonts, had 6 to 12, and the mammoths and modern elephants 16 to 24, and even 28. Along with the multiplication of transverse ridges went the increase in cement reinforcement signifying specialization.

THE TUSKS

Morphologically, tusks are incisors which grow from persistent pulps. A series of fossil proboscideans show that the tusks gradually lengthened, and increased in weight, during the ages, until they became ponderous. Great muscles and sinews were necessary to support the weight of the ever-lengthening tusks and trunk. Accordingly, insensible changes took place. The early dolicocephalic skull, and longirostral jaw changed to the brachycephalic and brevirostral.

Early mastodons had short decurved tusks with enamel bands. Intermediate mastodons had longer and larger tusks with vestigial enamel bands, while later ones had long, straight, or slightly spiral tusks with the enamel band wanting. Though mastodon tusks are

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generally slim and relatively straight, there are many examples with large dimensions and extreme curvature. The persistence of this vestigial enamel band even in modern elephants is significant. A foot or so may still be seen on young elephant tusks. This is soon worn off by use. Mammoths generally, though not invariably, have ponderous tusks distinctly curved and spiral. Those found in this State are noticeably spiral.

MASTODONS IN GENERAL

Cope's classification of the mastodons has for a long time made the strongest popular appeal. He divided them into *Tetrabelodon,* or the four-tuskers, and *Dibelodon,* or the two-tuskers. This simple division gives the public a clue to the primary divisions of the group. These terms are particularly appropriate and descriptive.

Mastodons may, in a similar manner, be classed according to the lobes of their teeth, as Trilophodonts (three-crested molars) and Tetralophodonts (four-crested molars). Though serving the purposes of the naturalist, this latter division is less obvious than the former. Both of these general classifications are very useful.

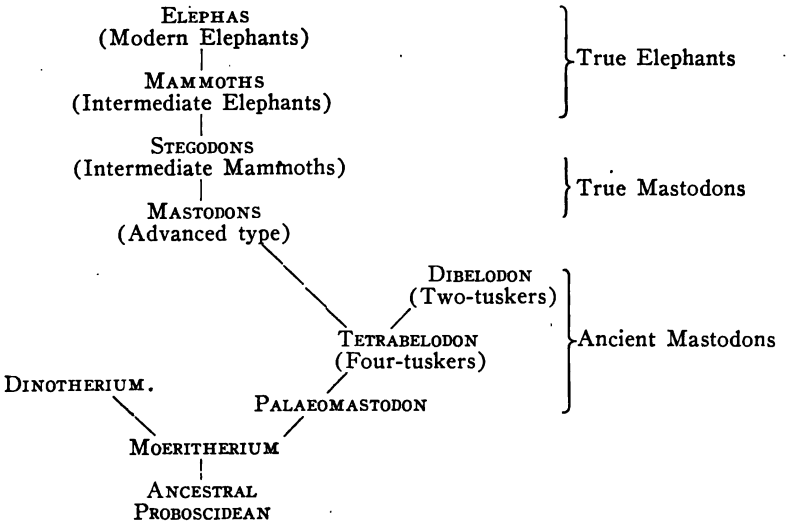

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PLATE III.

Scene at Devil's Gulch. Dragging the pelvis of *Eubelodon morrilli* over the brink of the canyon by means of block and tackle.

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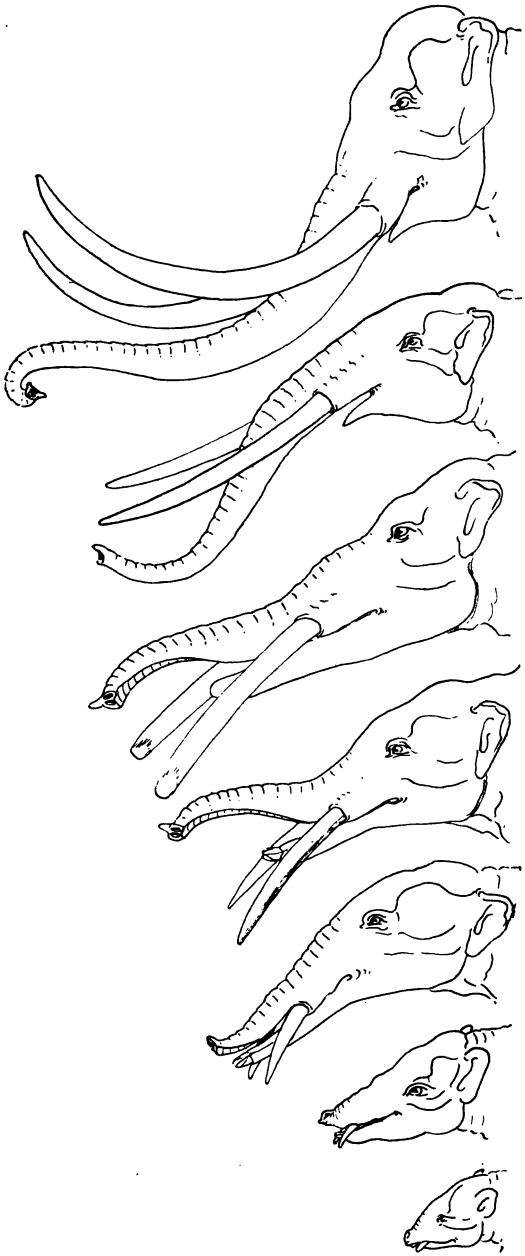
PLATE IV.



7, Mammoth.
Pleistocene.
Three species, the Columbian, Imperial, and Primitive are abundant in Nebraska.

6, Mastodon.
Mastodon americanus.
Common in Nebraska.
Pleistocene.

5, *Eubelodon morrilli.*
A trilophodont mastodon
Pliocene.
Devil's Gulch, Nebraska.

4, *Tetrabelodon willistoni.*
A late four-tusker.
A trilophodont mastodon.
Pliocene of Nebraska.

3, *Tetrabelodon.*
An early four-tusked mastodon.
Miocene.

2, *Palaeomastodon.*
Lower Oligocene, Egypt.

1, *Moeritherium.*
Ancestral proboscidean.
Upper Eocene, Egypt.

PLATE I

Evolution of the Proboscidea. Freehand sketches, approximately to scale, from casts and specimens in the collection of Honorable Charles H. Morrill, State Museum.

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The word mastodon has gone beyond the limits of scientific literature, and is now incorporated in our common speech. It seems to be the best and most expressive single word, and yet the name *Gomphotherium* (wedge-toothed beast) was proposed first, and has the right of priority. The reader will occasionally find *Mammut* in use by some writers, as *Mammut americanum,* which is synonymous with *Mastodon americanus.* Our word mammoth is an early English corruption for *Mammut.* The genus *Mastodon* must inevitably undergo many subdivisions, even though the multiplication of names is confounding to the general palaeontological reader.

MASTODONS AND MAMMOTHS IN NEBRASKA

Mastodons in Nebraska date from the late Miocene, continued through the Pliocene and Pleistocene and became extinct at the close of the glacial epoch. They ranged through the United States, Canada, Alaska, and Mexico. The present collections in the State Museum show at least seven distinct forms, namely: *Mastodon willistoni, M. morilli, M. euhypodon, M.* undetermined, *M.* undetermined, *M. mercificus, M. americanus.* It is believed that mastodons, though earlier arrivals, outlived the mammoths.

Three species of mammoths are well known in Nebraska, namely: *Elephas imperator, E. columbi,* and *E. primigenius.* The most majestic of them all, *Elephas imperator,* the giant imperial elephant, with a height exceeding 13 feet, ranged from Nebraska westward to the Pacific, and southward to Mexico, during Pleistocene times. The next largest, *Elephas columbi,* the great Columbian elephant, with a height of 10 to 11 feet, followed in the middle Pleistocene, and ranged over the entire United States and Mexico. These two mammoths had a southern adaptation. They were followed by a mammoth of a northern adaptation known as the great northern, or hairy mammoth, *Elephas primigenius,* which had a height of 9 feet. This is the mammoth best known to the public. Its range was west, extending from the Atlantic to the Pacific, along the northern part of the United States, throughout British Columbia, and over Alaska. Proboscideans attained ponderous size at a surprisingly early period, especially in Europe.

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THE DEVIL'S GULCH BEDS

On a recent collecting trip to Devil's Gulch and vicinity, in northern Brown County, a large and varied collection representing the mammalian fauna of the Loup Fork beds of that region was secured for the University Museum. These fossils are a part of the extensive palaeontological collections of Honorable Charles H. Morrill, and may be counted the largest and most important, which have ever been secured for the University in so short a time. All of the material is highly interesting from the view point of the palaeontologist, and some of it is new and of first importance.

Early in May, 1913, Mr. A. C. Whitford, an assistant on the Nebraska State Geological Survey, and a Fellow in the Department of Geology, was sent to Devil's Gulch to prospect for the bones of "*Tetrabelodon*." His success led the writer, accompanied by Mr. Harold Eaton, to join him at once. The party camped for ten days in Devil's Gulch and obtained two wagon loads of excellent material. Exploratory work was then continued by Mr. Whitford until October.

The Niobrara River, which is the boundary between Brown and Keya Paha counties, has a broad valley, perhaps a mile across at this point. The land immediately adjacent is considerably cut by side streams, some of which show bold bluffs and canyon walls. Dutch Creek flows for several miles between deep, precipitous walls, and empties to the north into the Niobrara. Extending in a northwesterly direction, as a tributary to Dutch Creek, is Devil's Gulch, a narrow, precipitous, picturesque canyon, about 225 feet deep, and scarcely more than a mile in length. Certain portions of the canyon are heavily forested with bull pine, yet the walls are mostly bare and precipitous for they are subjected to the heavy erosive action of wind and rain, and many well-preserved bones are exposed. This Gulch is about 15 miles north of Ainsworth, upon the three-thousand-acre ranch of Mr. William A. Jamison, through whose courtesy the University was allowed to collect at will.

A geologic section of the place is readily obtained by following the course of the canyon. At the junction of the Gulch with

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PLATE V.

Tetrabelodon willistoni. Side view showing flat occiput, narrow, but well-arched dome, and long jaw with tusks. The tool marks indicate the parts restored. The upper molars are Nos. 1, 2, 3, and 4. The lower molars are Nos. 2, 3, and 4. Attention is directed to the lachrymal bone.

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PLATE VI.

a

b

Tetrabelodon willistoni. *a,* top view of skull showing a narrow, but well-arched dome, flattish occiput, expanded anterior nares, and greatly reduced nasals. Tool marks indicate restored parts. *b,* palatine view, showing bifurcated maxillae, narrow posterior nares, and teeth, Nos. 1, 2, 3, and 4. Tool marks at base of skull indicate restoration.

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Dutch Creek, large banks of Pierre shale are exposed. The very topmost layer, some 50 feet in thickness, is a bright ochre-yellow color, instead of the customary dull, slate color. There are certain thin, flinty, nodular bands, traces of which are found as far as Sioux County. This bed has been traced to the west and to the north, well into South Dakota, especially around the Rosebud Agency. To the southwest, in Furnas County, near Beaver City, the ochreous, flinty, nodular layers are very pronounced. The character of this 50-foot bed seems constant, and we made free in our field notes to call it the Ainsworth formation. Above the Pierre occurs the well known Oligocene bad lands, which in certain exposures shows a thickness of about 100 feet. Immediately overlying this come 225 feet of sandy beds belonging to the "Loup Fork." In our field notes, we have called this the Devil's Gulch stage.

As to the geological horizon, the faunal evidence suggests Pliocene equivalent to the Snake Creek beds of southern Sioux County. Possibly some Pleistocene may be represented. Further study will be necessary to determine accurately the geologic position of this newly explored fossil field. Faunal comparisons show this bed to be much earlier than that of Hay Springs, and later than that of the famous Agate Springs Quarries. It will not be far wrong to call the Devil's Gulch deposits, Pliocene. The upper part may merge into Pleistocene. Unlike the beds at Agate Springs, which are sufficiently lithified to make the chisel and pick necessary, the beds at Devil's Gulch are so loose and sandy, that work is greatly facilitated. Only occasionally are mineralized or concretionary patches encountered.

The bones, when freshly exhumed, are of a light brown color, changing to whitish on continued exposure to sunlight. The bones near the base of the canyon seem to be harder and more enduring than those near the top which are soft and perishable to the last degree, demanding skillful treatment.

TWO NEW MASTODONS FROM DEVIL'S GULCH

The discovery of two new mastodon skulls, with mandibles, and certain skeletal parts, is of special interest, and constitutes the

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feet (915 mm.) apart at the tips, and curve downward slightly. Each tusk is 4 feet (1,220 mm.) long. One foot of the tusk is firmly imbedded in the jaw, and an additional 6 inches is partly sheathed and buttressed by the maxillae. Since the tusks are sheathed by the maxillae in the typical Proboscidea, they have been considered by some as morphologically canine teeth. The skulls of young elephants show that the tusks are erupted from the premaxillae and are incisors.

Incident to growth from persistent pulps, the young incisors naturally outgrow the limits of the premaxillae, and invade the maxillae. They are incisors grown indefinitely large. In most Tetrabelodons, there is a conspicuous bifurcation of the maxillary sheath, but especially so in *Eubelodon morrilli*. Beyond the tips of the maxillae, the tusks project 30½ inches (776 mm.).

The skull is still in the hands of preparators, and has not yet been fully worked out or turned over, to show the anterior narial apertures. From observation in the quarry, it seems that the surface for the attachment of the muscles of the proboscis is restricted in area. Undoubtedly the proboscis, that most distinctive badge of the group, was only partly developed, and was short.

The posterior narial aperture is large, nearly circular, and with vertical walls. Its antero-posterior diameter is 4½ inches (115 mm.). The transverse diameter is 3½ inches (90 mm.). From its anterior border to the tips of the maxillae is 24 inches (610 mm.). The basicranial elements, and the palate lie in a plane perforated by the postnarial aperture, while in *Elephas* these same parts are at right angles.

That the cancellous portions of the bone of the brain box lack the extreme inflation of air cells common in *Elephas* is quite apparent, and is readily accounted for. Though the head was very large, larger than an ordinary elephant, the tusks and trunk were not ponderous, and did not demand such an abnormal surface area for the attachment of muscles.

The pelvis, including sacrum and sacral spine, is perfectly preserved, and indicates an animal of large size. The acetabulum measures 6½ inches (165 mm.) in diameter. The neural arch measures 1½ inches (38 mm.) The pelvic aperture is 16 inches

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PLATE VII.

Skull of Modern Elephant. Top and side views of *Elephas indicus*. For comparison with *Tetrabelodon willistoni*. From a specimen in the State Museum.

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(407 mm.) transversely, by 14 inches (356 mm.) vertically. The thyroid foramen is 7½ × 4½ inches (192 × 115 mm.). The extreme width across the ilia is 56 inches (1424 mm.).

HYPOHIPPUS MATTHEWI sp. nov.

Two maxillae of a very large *Hypohippus,* together with scattered lower teeth, and numerous skeletal parts, were found below but near Quarry No. 1, Devil's Gulch. Some of these bones occurred in a bed of white diatomite, about 10 inches thick, and about 150 feet long. Several complete feet, and numerous limb bones were dug out of this diatomite, and were so faultlessly preserved that it may be said, a better matrix cannot be found. The feet found in the diatomite confirm the belief that this genus is tridactyl. *Hypohippus* is a horse of forest adaptation. Several species are known, notably *Hypohippus affinus, H. osborni,* and *H. equinus. Hypohippus matthewi* exceeds all of these in size. It is undoubtedly the largest member of the genus known as yet.

Hypohippus matthewi, named for Dr. W. D. Matthew, though closely resembling *Hypohippus affinis* is much more hypsodont, and is from one-fifth to one-eighth larger, as may be seen in the accompanying half tone figures, which are exact size. It is presumably a later mutant.

Hypohippus is closely related to *Anchitherium,* and is classed as the most advanced member of the *Anchitheres.* The briefest description of the teeth of *Hypohippus matthewi* is that they are *Mesohippus* enormously enlarged. They are strikingly similar point for point. It should be noted that *Anchitherium,* the European form, is closely related to *Mesohippus,* the American.

Though represented at one time by roving herds of many varieties, horses are now reduced to but one family, the Equidae, which includes the three living genera, *Assinus* (the wild asses), *Hippotigris* (the zebras), and *Equus* (the true horses).

Our modern horses, though monodactyl in one sense, are tridactyl in another, for the two splint bones are ancestral toes persisting at the present time.

Ancestral horses are characterized by long bodies, arched backs, short limbs, short necks, short teeth, long tails, and polydactyl

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feet. The opposite is true of the later equines. The ancestral horses fall into four groups, each including its quota of genera. The fossil horses are assembled under the divisions: (1) Hyracotheres; (2) Anchitheres (3) Protohippines; and (4) Equines, the later horses.

Ancestral horses had cementless, short-crowned, brachydont teeth, while later members of the branch had partly cemented crowns of considerable length, sub-hypsodont; and the more recent members had very long, cemented crowns, hypsodont teeth.

It is an interesting fact that in the same bed with *Hypohippus matthewi,* simple and complex, short-crowned, and long-crowned teeth were found intermingled. This emphasizes the fact that the old and less advanced forms of equids persisted and mingled with the new and more advanced types.

In *Anchitherium, Mesohippus, Hypohippus,* and closely related forms, the transverse crests of the teeth are generally distinct and perfect. In *Hypohippus matthewi,* the metaloph is continuous with the ectoloph. This cross crest runs obliquely forward, then obliquely backward and meets the ectoloph at the mesostyle. The styles are well developed, and the parastyle is bold and strong. The fosettes are very deep, and the bounding walls nearly vertical. The protoloph runs obliquely forward and outward by a sigmoid curve to the anterior border of the tooth. It is entirely disconnected from the ectoloph in the premolars, but gradually becomes more connected in the first molar. The teeth are fully adult, though not old, with the outer crest and cross crests worn. The teeth, especially those of the left side, show pronounced cement reinforcement half way up the crown, and all are etched by "Daimonelix fibers."

Measurements of the teeth of Hypophippus Matthewi:

Pm 1. Missing. Represented by an alveolar scar and root.
Pm 2. Antero-posterior diameter along outer border, 38 mm.
Diameter through hypoconule to front of tooth, 31 mm.
Greatest transverse diameter, 36 mm.
Extreme height of crown, 30 mm.
Pm 3. Antero-posterior diameter along outer border, 37 mm.
Diameter through hypoconule to front of tooth, 32 mm.
Greatest transverse diameter, 41 mm.

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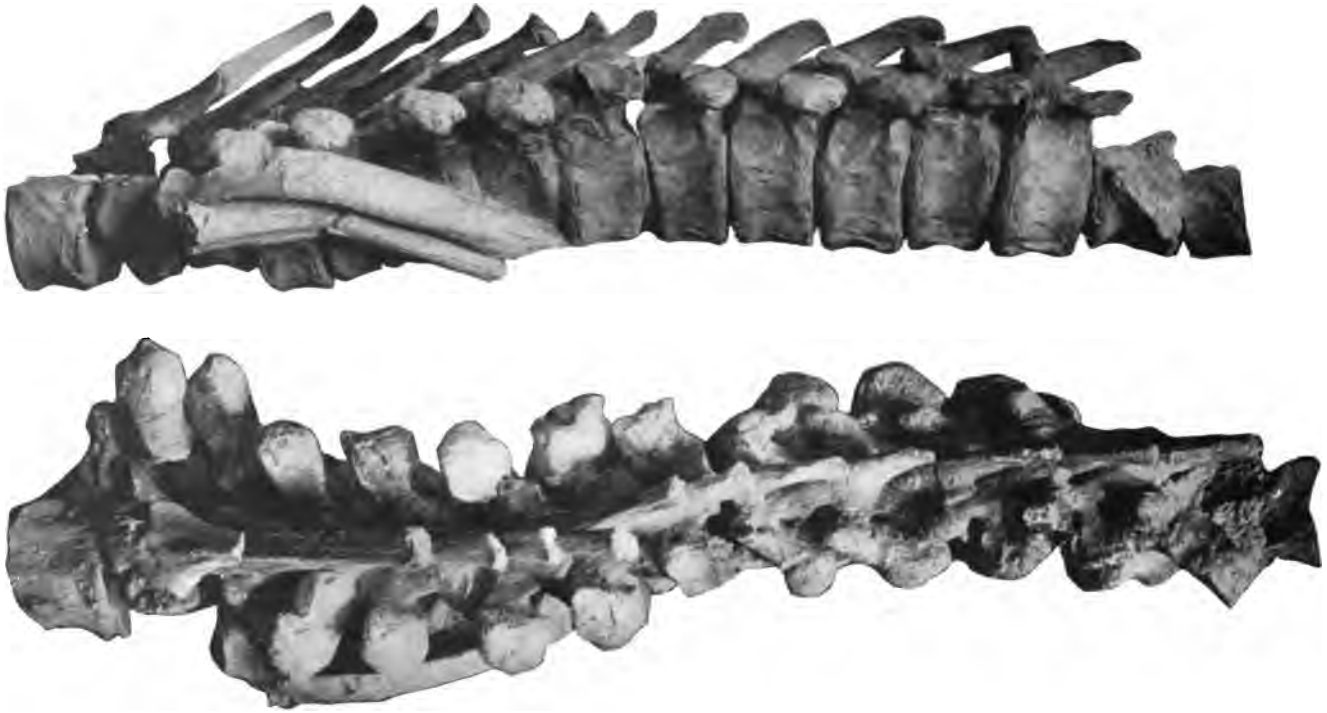
PLATE XI.



Vertebrae, *Eubelodon morrilli*. *a*, side view of fifteen vertebrae. Eleven were found in position with ribs attached. All ribs save two have been removed. *b*, dorsal view. × 1/8.

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PLATE XII.

Eubelodon morrilli. Pelvis with sacrum. Practically without blemish. Extreme width 56 inches (1,424 mm.); pelvic aperture 16 inches (407 mm.); thyroid foramen 4½ × 7½ inches (115 × 192 mm.).

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Extreme height of crown, 36 mm.
Pm 4. Antero-posterior diameter along outer border, 35 mm.
Diameter through hypoconule to front of tooth, 33 mm.
Greatest transverse diameter, 43 mm.
Extreme height of crown, 36 mm.
M 1. Antero-posterior diameter along outer border, 36 mm.
Diameter through hypoconule to front of tooth, 33 mm.
Greatest transverse diameter, 41 mm.
Extreme height of crown, 29 mm.

Hypophippus affinis, Leidy:

2d or 3d upper molar. Antero-posterior diameter along outer border, 29 mm.
Diameter through hypoconule to front of tooth, 26 mm.
Greatest transverse diameter, 27 mm.
Extreme height of crown, 15 mm.

Partial Faunal List, Devil's Gulch Beds

Turtle
1. *Testudo orthopygia*
2. *Testudo,* undetermined.

Canids
3. *Aelurodon*
4. *Tephrocyon*
5. *Cynarctus,* sp. nov.
6. *Cyon*
7. *Temnocyon?*

Mustelids
8. *Mustelid,* undetermined

Felids
9. *Machaerodus,* sp. nov.

Camels
10. *Oxydactylus*
11. *Alticamelus*
12. *Procamelus*
13. *Pliauchenia*
14. Camel, undetermined

Creodonts

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15. *Metoreodon*

Merycodonts

16. *Merycodus necatus*

Rhinoceros

17. *Teleoceras*
18. *Rhinoceros,* undetermined

Equids

19. *Parahippus*
20. *Hypohippus*
21. *Merychippus*
22. *Protohippus*
23. *Pliohippus*
24. *Hipparion*

Proboscideans

25. *Tetrabelodon willistoni,* sp. nov.
26. *Mastodon euhypodon?*
27. *Mastodon,* undetermined
28. *Mastodon morrilli,* sp. nov.

THE UNIVERSITY OF NEBRASKA,
December, 1913

PLATE IV

Evolution of the Proboscidea. Freehand sketches, approximately to scale, from casts and specimens in the collection of Honorable Charles H. Morrill, State Museum. 1, *Moeritherium.* Ancestral proboscidean, Upper Eocene, Egypt. 2, *Palaeomastodon.* Lower Oligocene, Egypt. 3, *Tetrabelodon.* An early four-tusked mastodon. Miocene. 4, *Tetrabelodon willistoni.* A late four-tusker. A trilophodont mastodon. Pliocene of Nebraska. 5, *Eubelodon morrilli.* A trilophodont mastodon, Pliocene. Devil's Gulch, Nebraska. 6, Mastodon. *Mastodon americanus.* Common in Nebraska. Pleistocene. 7, Mammoth. *Elephas primigenius.* Pleistocene. Three species, the Columbian, Imperial and Primitive, are abundant in Nebraska. Pleistocene.

PLATE I

General View of Devil's Gulch. Looking up the canyon. Quarry No. 1 is at *a.*

PLATE II

Nearing the Brink of the Canyon. Dragging out, by means of block and tackle, a slab containing the skull of *Tetrabelodon willistoni.* Quarry No. 2 is at *a.*

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PLATE XIII.

Stray Mastodon Bones from Devil's Gulch.

Eubelodon morrilli, *a*, *b*, *c*, *d* and *e*.

a, left femur from above. × 1/8.

b, same, back view. × 1/8. Across head and tuberosity 14 inches (355 mm.).

c, patella.

d, right tibia and fibula united. Apparently not pathological. × 1/10. Tibia 22 inches (560 mm.) long.

e, left humerus, front view. × 1/8.

Tetrabelodon willistoni, *f*, *g* and *h*.

f and *g*, front and back view of left humerus. × 1/10. Total length 25 inches (635 mm.).

h, five tusks showing varying widths of enamel bands.

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PLATE III

Devil's Gulch. Dragging the pelvis of *Eubelodon morrilli* over f the canyon by means of block and tackle.

PLATE V

'odon willistoni. Side view showing flat occiput, narrow, but ed dome, and long jaw with tusks. The tool marks indicate the stored. The upper molars are Nos. 1, 2, 3, and 4. The lower re Nos. 2, 3, and 4. Attention is directed to the lachrymal bone.

PLATE VI

abelodon willistoni. *a,* top view of skull showing a narrow, but rched dome, flattish occiput, expanded anterior nares, and greatly ed nasals. Tool marks indicate restored parts. *b,* palatine view, ng bifurcated maxillae, narrow posterior nares, and teeth, Nos. 1, 2, l 4. Tool marks at the base of skull indicate restoration.

PLATE VII

Skull of Modern Elephant. Top and side views of *Elephas indicus.* r comparison with *Tetrabelodon willistoni.* From a specimen in the ate Museum.

PLATE VIII

Tetrabelodon willistoni. *a,* mandible showing slightly decurved symphysis; deep groove, and two strong tusks; molars 2, 3, 4; strong ascending rami; relatively high condyles and coronoids, and a pronounced sigmoid notch. *b,* top view. *c,* bottom view.

PLATE IX

Eubelodon morrilli. Palatine view of skull showing wedge-shaped tusks, molar No. 6, and large circular, posterior nares. The tinted area at the base of the skull signifies restoration. Photographed under nearly impossible conditions.

PLATE X

Eubelodon morrilli. *a,* mandible, side view, showing low, ascending rami, low condyles and coronoids. Length 43 inches (1,092 mm.). *b,* top view. Sixth molar 8 × 3½ inches (203 × 89 mm.). Symphysial prolongation 15½ inches (393 mm.). *c,* bottom view.

PLATE XI

Vertebrae, *Eubelodon morrilli.* *a,* side view of fifteen vertebrae. Eleven were found in position with ribs attached. All ribs save two have been removed. *b,* dorsal view. × ⅛.

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f and *g,* front and back views of left humerus. × 1/10. Total length 25 inches (635 mm.).

h, five tusks showing varying widths of enamel bands.

PLATE XIV

Hippohippus matthewi. a, side view showing unusually hypsodont teeth. *b,* top view. These teeth are reproduced to exact size for the sake of measurement and comparison.

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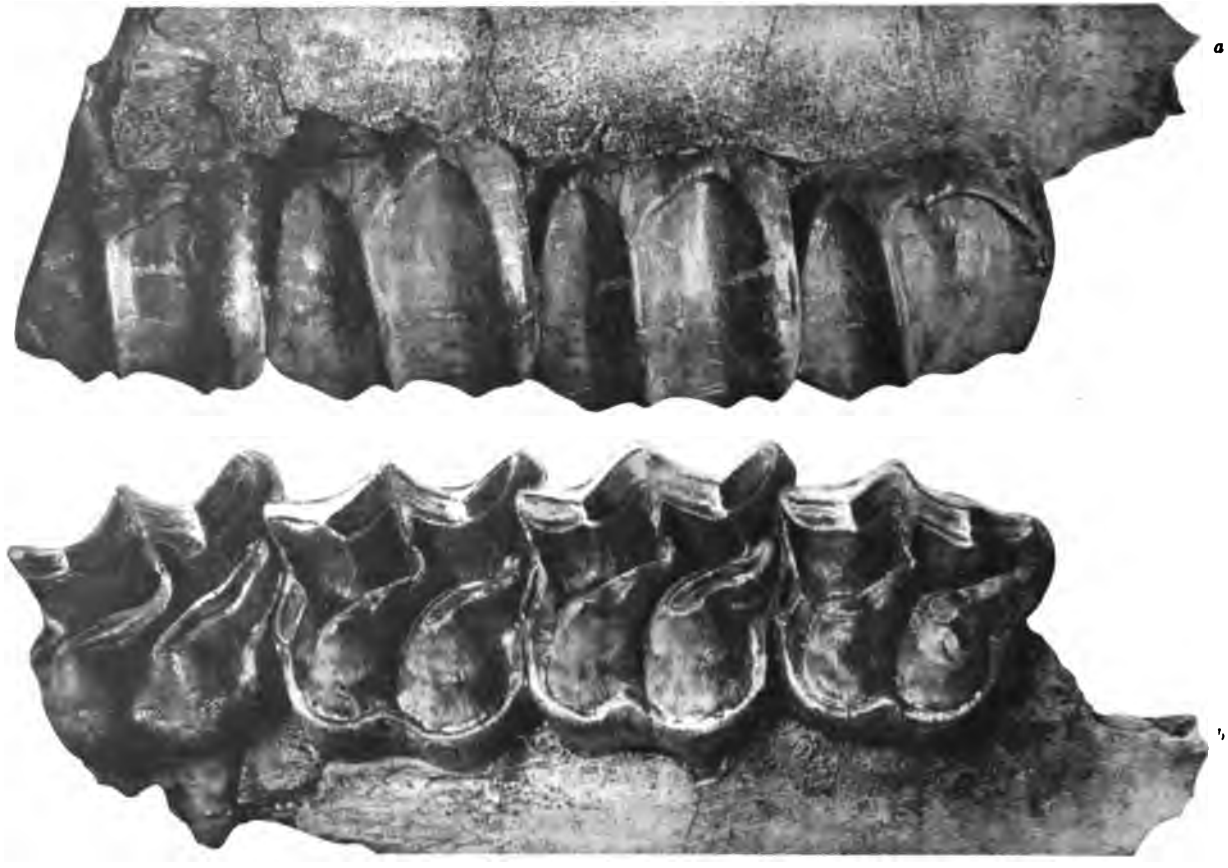
PLATE XIV.



Hippohippus matthewi. *a*, side view showing unusually hypsodont teeth. *b*, top view. These teeth are reproduced to exact size for the sake of measurement and comparison.

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VOL. XIV JULY 1914 No. 3

OCT 15 1914

UNIVERSITY STUDIES

PUBLISHED BY THE UNIVERSITY OF NEBRASKA

COMMITTEE OF PUBLICATION

C. E. BESSEY P. H. FRYE
F. M. FLING P. H. GRUMMANN
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UNIVERSITY STUDIES

VOL. XIV JULY 1914 No. 3

THE OPENING OF THE STATES GENERAL OF 1789 AND THE FIRST PHASE OF THE STRUGGLE BETWEEN THE ORDERS

BY MAE DARLING

I.

THE OPENING CEREMONIES OF THE STATES GENERAL

The opening of the states general had been set for April 27, 1789. When that day arrived, however, instead of calling the deputies together for their first session, the king issued a decree stating that as all the deputies, especially those of Paris, were not present, the formal opening of the states general would not take place until May 4.[1] The struggle which the government had made against the calling of the states general, and the length of time that had been consumed in preparing for their meeting after they had been summoned, had aroused the impatience of the people. The majority of the deputies had at length been elected, however, and had gathered at Versailles, ready for the opening on April 27. Deeply impressed with the evils which were burdening their

[1] Biauzat, *Correspondance,* II, 11; *Journal des états-généraux,* I, 1; *Mercure de France,* III, 9 mai, 1789, *Journal politique de Bruxelles,* 74. The correspondence of Biauzat is a series of letters written by this deputy, who was a member of the third estate, to his constituents. The *Journal des états-généraux* was not published from the beginning of the estates general. On page 206 of volume 1, after the account of the royal session of June twenty-third, this foot-note is found: "Nous donnerons incessamment ce qui s'est passé aux états, depuis le commencement jusqu'au premier juin," indicating that up to this time no account had been published by the editors of events before the first of June.

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country, the deputies of the third estate, at least, were eager to begin their work—the work which they believed would restore the glory of France and relieve the condition of their unfortunate constituents. But again they were delayed in beginning this work. The postponement of the opening of the estates until May 4 aroused their apprehension. It is said that they feared there would be no meeting of the states general, that the king would dismiss the deputies before the sessions were begun.[2] Duquesnoy says that it was believed that the government was attempting to wear the representatives out by tedious delays.[3] The deputies questioned whether they would really assemble on May 4. Would there not be more delays, longer periods of waiting, until finally they should be sent back to their provinces, having accomplished nothing?

At last, however, the king was preparing in good faith to open the states general. On Friday, May 1, according to the account given in the *Récit,* he issued a proclamation in which he expressed his desire to meet the deputies and named Saturday, May 2, as the date for this ceremony.[4] In the decree of April 27, in which the king had postponed the opening of the estates until May 4, the costumes of the deputies of the different orders had been described in detail.[5] The deputies were to appear at the king's reception on May 2, in the prescribed costumes of their respective orders.[6] This insistence on a separate mode of dress for each

[2] *Journal des états-généraux,* I, 1.

[3] Duquesnoy, *Journal,* I, 23. For a discussion of the authorship of the *Journal,* see the article by Dr. Fling, in the *American Historical Review,* vol. 8, 70–77.

[4] *Récit des séances des députés des communes,* 2. The third estate did not commence to keep a record of its proceedings until June 12, 1789. Later (December 10, 1789), after the union of the orders, the assembly ordered that an official account of what had taken place from May 5 to June 12 should be drawn up. Salomon, Camus and Emmery were appointed to prepare this record, and the *Récit des séances des députés des communes* is the result of their work. For a discussion of the *Récit,* see Brette, *Les Constituants, Avertissement* XVII, XVIII.

[5] *Récit des séances des députés des communes,* 1, 2.

[6] *Ibid.,* 1; *Mercure de France,* III, *9 mai, 1789, Journal politique de Bruxelles,* 74.

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order, although apparently of minor importance, was a source of annoyance to the third estate. It emphasized the distinction between the orders, the thing which the commons most wished to avoid. The deputies of the third estate were insisting that the orders should be united and form one assembly; anything which indicated that the government considered the states general as made up of separate orders naturally irritated the commons. The distinction between the orders was emphasized still more at the reception by the manner in which the deputies were presented to the king. Instead of being presented simply as deputies of the states general, regardless of the classes which had elected them, the deputies of each order were admitted separately—the clergy at eleven o'clock in the morning, the nobles at one o'clock, and the third estate at four.[7] Biauzat states, however, that the deputies of the commons, instead of being presented to the king at the hour named, were obliged to wait for three "mortal" hours in the Salle d'Hercule, their turn not arriving until 7 o'clock.[8] This tedious waiting, added to the fact that they had been preceded by the other two orders, was sufficient cause for complaint. We are told, furthermore, that the deputies of the commons were not received by the king in the same room where the clergy and the nobility had been received.[9] If this is true and if the members of the third estate were aware of the distinction that was being made, it could not but have added to their indignation. It is clear that the government, even before the opening of the states general, had adopted a course which would arouse the opposition and suspicion of the third estate.

When, at length, the time for the presentation of the representatives of the third estate arrived, the deputies passed in single file, so Biauzat describes the ceremony, through a number of apartments, to the king's chamber. Here they passed in front

[7] *Récit des séances des députés des communes,* 3; *Journal des états-généraux,* I, 23; *Mercure de France,* III, *9 mai, 1789, Journal politique de Bruxelles,* 74.

[8] Biauzat, *Correspondance,* II, 22.

[9] Rabaut, *Précis,* 68. *Mercure de France, 16 mai, 1789, Journal politique de Bruxelles,* 131.

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of the monarch, bowing as they did so to his majesty[10] who stood during the ceremony, the royal princes and the guard of the seals beside him.[11] It is said that during the entire ceremony the king kept absolute silence, except at one time when he made a remark, which was not heard by those reporting it, to a deputy from Bretagne who had not appeared in the regulation costume.[12] Biauzat states that the deputies passed on the way to the king's chamber through a gallery where the ladies of the court had the opportunity, as the line passed slowly by them, to view these representatives of the nation.[13]

The king had ordered that on Monday, May 4, mass should be said at the church of St. Louis, for the purpose of invoking the blessings of heaven upon the states general. The deputies were to be present at this service,[14] and they were instructed to meet at the church of Notre-Dame at seven o'clock in the morning, for the purpose of forming the procession for the march to St. Louis.[15] The deputies assembled at the hour named, but the king did not arrive until about ten o'clock.[16] This delay seems to have irritated some of the deputies. Duquesnoy, in his *Journal,* complains because "one individual" made a "whole nation wait for three hours." He adds that he saw marked signs of disapproval on the part of the deputies.[17] In arranging for the assembling of the deputies at Notre-Dame, the government had again taken care to keep the three orders separate. Instead of all the deputies meeting together in the church, the clergy

[10] Biauzat, *Correspondance,* II, 21; *Journal des états-généraux,* I, 2.

[11] Biauzat, II, 21.

[12] Duquesnoy, I, 2.

[13] Biauzat, II, 22.

[14] *Récit des séances des députés des communes,* 3; *Mercure de France,* III, *16 mai, 1789, Journal politique de Bruxelles,* 120.

[15] Biauzat, II, 26; Duquesnoy, I, 3.

[16] Duquesnoy, I, 3; *Mercure de France,* III, *16 mai, 1789, Journal politique de Bruxelles,* 121. Duquesnoy gives the time as ten o'clock, the *Mercure de France* as ten-thirty.

[17] Duquesnoy (I, 3) says: "On m'a paru fort mécontent que le roi ne fut arrivé qu'à dix heures, et véritablement un individu ne fait pas attendre une nation pendant trois heures; j'ai vu des signes d'indisposition tres marqués."

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assembled in an adjoining building, the "maison de mission," while the nobles were placed on one side of the church, and the third estate on the other.[18]

The arrival of the king at Notre-Dame was preceded by that of the Duc d'Orleans, who, Duquesnoy says, was received with cries of "Vive le duc d'Orleans."[19] The princes of Condé, of Conti, and of Bourbon also preceded the monarch, all of these being received with a marked silence of disapproval.[20] When the king, after keeping the deputies waiting for about three hours, finally arrived, he was greeted with cries of "Vive le roi!"[21] Duquesnoy states that upon the arrival of the queen, two or three voices called out "Vive la reine!", but a greater number shouted "Fi donc!"[22] This insult was not made any the less noticeable by the fact that the Duchesse d'Orleans was applauded generously.

After the chanting of the *Veni Creator,* the procession was formed for the march to St. Louis.[23] The plan had been to have the deputies march by *bailliages,* but the third estate refused to do this, and were so persistent in their refusal that the arrangements were finally changed.[24] Biauzat relates that it was he who started the objection to being placed by *bailliages.* The grand master of ceremonies replied that the nobles had not objected to

[18] *Récit des séances des députés des communes,* 3; *Journal des états-généraux,* I, 1.

[19] Duquesnoy, I, 3.

[20] *Ibid.; Mercure de France,* III, *16 mai, 1789, Journal politique de Bruxelles,* 121. The *Mercure* gives the following names in this connection: the Prince de Condé, the Duc de Bourbon, the Duc d' Enghien, and the Prince de Conti.

[21] Duquesnoy, I, 3; Biauzat, II, 26. Duquesnoy says: "Ce n'était plus l'élan de l'âme, le cris du cœur." Biauzat, however, assures us that the shout was an enthusiastic one. He says: "Au moment où le roi y est entré, nous avons fait retentir les voûtes de ce temple d'un *Vive le Roi!* qui semblait ne partir que d'une seule bouche, mais d'une bouche qui avait toute la voix d'un royaume."

[22] Duquesnoy, I, 3. Gouvernor Morris in his *Diary* (I, 75) says that there were no shouts at all of *Vive la reine!*

[23] *Journal des états-généraux,* I, 2; *Mercure de France,* III, *Journal politique de Bruxelles,* 121.

[24] Biauzat, II, 22; *Journal des états-généraux,* I, 2; Duquesnoy, I, 3.

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being placed in this fashion. This argument had no effect on the commons and upon their still insisting that the plan should be changed, De Brézé communicated with the king at the chateau. The outcome was that the herald announced that the king had ordered that the call by *bailliages* should not be made. Biauzat adds that De Brézé's statement that the king "*ordered it*" annoyed the deputies of the third estate, evidence, probably, of their sensitiveness to undue exercise of royal authority.[25]

When the procession was finally formed, it was a magnificent spectacle. The *Mercure de France* describes the order of march as follows: "The clergy of the two parishes, preceded by the Récollets, opened the march; then followed the company of the guard of the Prévôté de l'Hotel, the Grand Prévôt at its head. The deputies of the three orders, in ceremonial garb, marched in front of the daïs, the third estate preceding the nobility who were followed by the clergy. The king, accompanied by his grand officers and by the guard du corps, and followed by the royal princes and by the dukes and peers, marched immediately in front of the Holy Sacrament. The grand chaplain of France carried his majesty's taper. At the left of the king was the queen, followed by her lady of honor who carried the train of her robe, and accompanied by her chevalier d'honneur and by her first squire. The grand chaplain of the queen carried her majesty's taper. . . . The Holy Sacrament was carried by the Archbishop of Paris."[26]

The minister of Parma, in speaking of the events of the day, says: "The crowd of people of every condition and of every rank, at the procession on Monday, was immense. The sight of that concourse of people assembled from the church of Notre-Dame to the church of St. Louis was magnificent. The streets, the windows, the roofs were crowded with spectators; heads of

[25] Biauzat, II, 22.

[26] *Mercure de France,* III, *16 mai, 1789, Journal politique de Bruxelles,* 122; Boullé, *Ouverture des états-généraux,* in *Révue de la révolution, Documents inédits,* 166.

Boullé agrees in general with the *Mercure de France* as to the order of march.

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women and children could be seen peering from the chimneys and on every face was a look of satisfaction. A jester might well have said that the crowd scarcely resembled an assembly of creditors who could not be paid. Nothing could be more splendid than the royal cortege. The beauty of the horses, the splendor of the harnesses, the richness of the carriages, the profusion of gold and diamonds on the garments of the princesses and of the king and queen were calculated to give an idea of the grandeur of France."[27]

Ferrières, in his memoirs, gives an account of the procession from the point of view of a participant. "The nobility," he says, "wore black coats, vests and facings of gold cloth, silk mantles, lace cravattes, hats decorated with plumes and cocked à la Henri IV; the clergy, their cassocks, great mantles, square hats; the bishops, their violet robes and their surplices; the third estate, black silk mantles and batiste cravattes. . . . Along the streets were hung the tapestries of the crown; regiments of French and Swiss guards formed a line from Notre-Dame to St. Louis; an immense crowd of people watched us pass in respectful silence; the balconies were decorated with rich cloth, the windows filled with spectators of all ages and of both sexes, and with charming, elegantly gowned women; the variety of hats, of plumes, of attire, the sympathy pictured on every face, the joy shining in every eye, the clapping of hands, expressions of affectionate interest, the expectant looks which watched for us and which still followed us after we were lost from view . . . made a delightful, enchanting scene, which I would try in vain to reproduce. Bands of musicians were placed at intervals, making the air resound with melodies; the military tramp of the procession, the noise of drums, the sound of trumpets, the solemn chant of the priests, each heard in turn without discord, without confusion, enlivened that triumphant march of the Eternal."[28]

[27] Vicomte de Grouchy et Antoine Guillois, *La révolution française,* 87.

[28] Ferrières, *Memoires,* 19, 20. Ferrières tells us that this description was written at the time the events took place. He says: "Je cède au plaisir de retracer ici l'impression que fit sur moi cette auguste et touchante cérémonie; je vais copier la relation que j'écrivis alors, encore plein de ce que j'avais vu et de ce que j'avais senti."

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The minister of Parma gives us some idea of the enthusiasm of the crowd and of the manner in which it greeted certain important persons in the procession. "The cries of 'Vive le roi,'" he says, "were heard from the moment of leaving the chateau up to the entrance into the church. . . . However, his majesty did not seem to notice these demonstrations, prompted by gratitude, by affection, by joy. The real cause [for the indifference of the king] was known later. He was grieved at not hearing the queen as enthusiastically applauded. It is asserted that the king, upon returning to the chateau, cried out in the bitterness of his heart, 'I thought I had done enough for my people for them to give me that slight token of gratitude.' The Duke and the Duchess of Orleans were received with outbursts of applause without number. The procession was a wonderful sight; the three orders were in regulation costumes, the third estate preceded the nobility, the latter were in front of the clergy. There was loud applause for a certain deputy in the ranks of the third estate, a rich farmer from Rennes, named Gérard, whose venerable appearance and violet vest attracted the attention of everyone. It was with great difficulty that he had been made to put on the black coat and mantle, but, in order that no one might be ignorant of the fact that he was a peasant, he had kept his coarse woolen garment underneath. When the Duc d'Orleans appeared among the deputies of the nobility, the applause and cries of 'Vive monsieur le duc d'Orleans' began again with renewed vigor; the prince seemed deeply touched, his eyes were moist with tears of satisfaction.

"The bishops with their violet garments, the two cardinals, de la Rochefoucauld and de Laval in red mantles, the splendor of the chasubles, the richness of the daïs, the cords of which were held by the brothers of the king and by the dukes d'Angoulème and de Chartres, the large retinue which followed with the king and the queen, the Holy Sacrament, the double line of the Cent-Suisses and of the bodyguard, all that together surpassed the expectation of the public, and satisfied its curiosity."[29]

[29] Vicomte de Grouchy et Antoine Guillois, *La révolution française*, 87, 88.

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It is hard to believe, however, that it was curiosity alone that was holding the attention of the people. This day meant more to them than a gala day, more than simply an opportunity to see a display of gorgeous attire and splendid equipages. They believed that it marked the beginning of a new order of things, that oppression was at last to be overcome, their country regenerated and prosperity restored. Throughout the line of march it was the third estate, the deputies who were expected to bring about these reforms, who aroused the greatest enthusiasm. It was not the clergy in its rich ceremonial garb, nor the nobility in its gorgeous court dress, nor even royalty itself with all its magnificent retinue, that received the heartiest cheers from the crowd. On the contrary, it was the third estate, in their somber black garments, without adornment of any kind and absolutely lacking in anything to delight the curious spectator. The *Récit* says: "During the march, the commons did not cease to receive the most touching testimonials of the confidence and of the attachment of the people."[30] "It seemed to me," wrote Boullé, "that the third estate, although not brilliantly attired, appeared to an advantage, for everywhere its passage called for cheers and clapping of hands."[31]

Madam de Staël, in giving her impression of the procession and of some of the deputies, writes: "I shall never forget that moment, the day before the opening of the states general, when twelve hundred deputies of France passed in procession going to the church to hear mass. . . . That new kind of power in the nation whose nature and force were as yet unknown, astonished the greater part of those who had not reflected upon the rights of the people." After discussing the loss of prestige by the clergy and the nobility, the writer continues: "The importance of the deputies of the third estate is increased by this [condition of the upper orders]. Their black coats and black mantles, their air of confidence, their large numbers, made them the center of attention; men of letters, merchants, and a great many lawyers com-

[30] *Récit des séances des députés des communes*, 4.

[31] Boullé, *Ouverture des états-généraux* in *Revue de la révolution, Documents inédits*, 167.

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posed that third order. Several nobles had been elected deputies of the third estate and conspicuous among them was Mirabeau. . . . It was difficult not to continue looking at him when once he had been seen; his immense head of hair distinguished him from the others; it might have been said that his power, like Samson's, depended on that [luxuriant hair]. The expressiveness of his face was added to by its very ugliness and his whole person gave the idea of an irregular power, but a power after all such as one would imagine would be found in a tribune of the people."[32]

When the procession reached the church of St. Louis, a dispute arose concerning the seating of the deputies, which indicated the temper of the third estate as well as the attitude of the government. When the deputies arrived there was no one to show them where they were to sit and the third estate at once proceeded to occupy the front seats. Presently there appeared a young man, who is described by one of the deputies as having been dressed in a "mantle resplendent with gold and jewels, his fingers covered with diamonds and his head adorned with plumes of dazzling whiteness. A baton of ebony, with a handle of ivory, which he held gracefully, was the sign of his high position."[33] This elegant gentleman, whose attire contrasted so strangely with the black garments of the third estate, announced that he was none other than the grand master of ceremonies, the Marquis de Brézé. He at once ordered the deputies of the commons to retire to the rear seats, but one of the deputies objected, asking who was to occupy the front seats. He was informed by De Brézé that they were reserved for the privileged orders. If the account of Larevellière, who was probably the one who was leading the dispute, is correct, he answered the grand master by saying, "Thus, Mr. Grand Master of Ceremonies, you will place the deputies of the nation behind those of the two small privileged orders, which are but a fraction of the nation." De Brézé argued that this was the arrangement that had been used in 1614, to which the deputy replied that these were not the estates of 1614. The outcome of the quarrel was that the deputies of the commons

[32] De Staël, *Considérations sur la révolution française*, I, 148, 149.

[33] Larevellière de Lepeaux, 1, 67.

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were obliged to take seats behind the privileged orders.[34] Once more they had been annoyed by the humiliating distinctions made between themselves and the privileged orders.

The sermon at the church of St. Louis was preached by the Bishop of Nancy.[35] There seems to have been nothing remarkable in the discourse except the attack made on the luxury of the court. In speaking of the growth of the expenses of the realm, Biauzat says that the speaker attacked those who, bored by an excess of luxury and grandeur, found it necessary to seek pleasure in "childish imitations of nature," referring, evidently, to the queen's *Petit Trianon* where her majesty entertained herself and her courtiers by imitating rural life.[36] The bishop's attack on the luxury of the court so pleased the deputies that they apparently forgot they were in a sacred edifice and applauded enthusiastically.[37]

When the crowd left the church, Duquesnoy says that there was no applause for the queen who sat in her carriage for several minutes before it drove away, giving plenty of opportunity for a demonstration.[38] According to this same writer, there was little applause for the king, but much for the Duc d'Orleans, who, throughout the day, had been the subject of the enthusiasm of the crowd.

At the close of the service, the deputies dispersed to meet the following day, the day which meant so much to them, so much to France—the opening day of the states general, called for the first time since 1614.

[34] Larevellière de Lepeaux, *Mémoirs,* I, 67; Duquesnoy, I, 4; *Récit des séances des députés des communes,* 4. The *Récit* simply mentions that the third estate was placed behind the other two orders; the other accounts give the details of the quarrel, agreeing on the main points.

[35] Duquesnoy, I, 5. *Mercure de France,* III, *16 mai, 1789, Journal politique de Bruxelles,* 132; *Journal des états-généraux,* I, 13.

[36] Duquesnoy, I, 5. Duquesnoy criticizes the sermon in the following manner: "En total, il est faible, plein de remplissages, de déclamations; un style de rhétoricien sans méthode, sans gout. Il ne s'est pas élevé à la hauteur de son subject, à beaucoup, beaucoup près."

[37] Duquesney, I, 5; *Mercure de France,* III, *16 mai, 1789, Journal politique de Bruxelles,* 132; Biauzat, II, 27.

[38] Duquesnoy, I, 6.

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The deputies met the next morning, May 5, in the Salle des Menus, in the large main hall which had been prepared for the occasion.[39] They were admitted first to a sort of ante-room, where they waited, with some impatience, the call of the herald at arms, who admitted them into the hall. Biauzat states that this call was made by bailliages, the deputies of the three orders of each bailliage being called at the same time.[40] After being admitted to the hall, the deputies were conducted to the places reserved for their respective orders.[41] Grimm describes this room in which the estates met for their first session, as follows: "It is a large and beautiful hall, one hundred-twenty feet long and fifty-seven feet wide between the columns. These columns are fluted, of Ionic order and without base, in the Greek fashion. The entablature is enriched with ovolos and above rises the ceiling, pierced by an oval in the middle. The light which comes through this oval is softened by a canopy of white taffeta. At the two ends of the hall, there are two similar openings which follow the direction of the entablature and the curve of the ceiling; this manner of lighting the hall spreads everywhere a soft and perfectly equal light. . . . At the end of the hall, at the place set apart for a platform for the king and the court, there had been placed a magnificent daïs, the curtains of which were attached to the columns [of the hall]. The enclosure, raised a few feet in the form of a semicircle, was carpeted with violet colored velvet, decorated with *fleur de lis* in gold. At the rear, under a superb canopy, was the throne. On the left of the throne stood an arm chair for the queen, and seats for the princesses;

[39] Biauzat, II, 28; *Récit des séances des députés des communes,* 5; Grimm, V, 124; Duquesnoy, I, 6; *Journal des états-généraux,* I, 3.

[40] Biauzat, II, 28; Rabaut, *Précis,* 72. Rabaut states that there was a distinction made between the two orders in their entrance into the hall, the privileged orders entering by a large door, while the third estate was forced to use a small door in the rear. This statement is virtually contradicted by Biauzat's account, and it is not mentioned by other members of the third estate. It is probable that Rabaut, who did not write his account until the fall of 1791, confused these events with those happening at the royal session of June 23.

[41] Biauzat, II, 28; Rabaut, *Précis,* 72.

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on the right, seats for the princes; at the foot of the throne, on the left, there was an arm-chair for the guard of the seals; at the right, a chair for the grand chamberlain. At the foot of the platform, there had been placed seats for the secretaries of state, and in front of them a large table covered with violet velvet; at the right and at the left of that table were seats covered with violet velvet, decorated with *fleur de lis* of gold; those at the right were for the fifteen counsellors and the twenty *maîtres de requêtes,* invited to the session; those at the left, for the governors and lieutenant-generals of the provinces. Running lengthwise of the hall, at the right, were the seats for the deputies of the clergy, at the left, those for the nobility, and at the back, facing the throne, those for the commons. The floor of the hall was covered with the most beautiful carpets of Savonnerie.

"By nine o'clock there were no more seats, no galleries which were not occupied. One would probably not be far wrong in estimating that those places contained more than two thousand spectators. Except the seats between the columns, reserved for the foreign ministers, all the front seats had been reserved for the ladies, and they contributed not a little to the pomp of the spectacle by the elegance and richness of their attire."[42] The deputies were again in their ceremonial costumes, the nobles in their garments faced with gold cloth, with white plumes in their hats; the clergy in full regalia; the deputies of the third estate again noticeable by their black garments in the midst of this brilliant company.[43] Necker is said to have been the only one in the assembly not in ceremonial dress.[44]

As certain distinguished persons arrived, they were met with signs of approval or of disapproval, according to the position they held in the estimation of the people. The Duc d'Orleans, the

[42] Grimm, I, 125–126; Biauzat, II, 29; *Mercure de France,* III, *16 mai, Journal politique de Bruxelles,* 133. The *Mercure de France* contains a description of the hall that is plainly dependent on Grimm's account. The description, for the most part, follows exactly the one given by Grimm, a few omissions having been made in such a way as to indicate that Grimm is the original source.

[43] Grimm, I, *127*; Rabaut, *Précis, 72.*

[44] Grimm, I, *127.*

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Bishop of Nancy and Necker were among those who were greeted with applause.[45]

Gouvernor Morris, in describing the events of the day, tells of an old man, a deputy of the third estate, who was cheered enthusiastically because he had dared to appear without being dressed in ceremonial attire.[46] Mirabeau is mentioned as having received marked proof of his unpopularity; no sound of applause was heard as he entered; Madame de Staël says that there were even murmurs of disapproval,[47] while Morris asserts that Mirabeau was hissed.[48]

About one o'clock, according to the *Récit,* the arrival of the king was announced. As he entered the hall, accompanied by the queen, the royal princes and princesses, and his courtiers, the assembly arose and greeted their sovereign with shouts of "Vive le roi!"[49] Grimm tells us that after having mounted the platform, the king, clothed in his royal mantle and wearing a hat decorated with plumes and enriched with diamonds, remained standing until the courtiers and his retinue had seated themselves and then, still standing, he pronounced the opening address.[50]

The king called attention, in this address, to the increase in the public debt, assigning as a cause the recent wars. He indicated that it was this increase in the debt that had caused him to call together the states general, showing very plainly that, in his opinion, it was the chief business of the estates to aid in putting the nation on a sound financial basis. His confidence in them had already been justified, he said, in that the two upper orders had signified their willingness to renounce their pecuniary privileges. Before closing his address, he remarked that he recognized "the authority and power of a just king in the midst of a people

[45] *Ibid.,* 127; Gouvernor Morris, I, 75; *Journal des états-généraux,* I, 4.
[46] Gouvernor Morris, I, 75.
[47] Madame de Staël, I, 152.
[48] Gouvernor Morris, I, 75.
[49] Grimm, V, 127; *Récit des séances des députés des communes,* 5; Gouvernor Morris, I, 75. The *Récit* says that there were shouts of "*Vive la reine!*" but Morris declares that these cries were heard for the first time at the close of the session.
[50] Grimm, V., 128.

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faithful at all times to monarchical principles," his idea evidently being to make it clear from the beginning that, in calling the states general, he had no intention of lessening the royal authority.[51] The king closed his address by expressing the hope that a "happy accord" would reign in the assembly and that it would become memorable for having aided in bringing about the happiness and prosperity of the realm. He then stated that the guard of the seals would explain more fully his intentions.[52]

Alexander Lameth says that after the king had closed his speech, the chancellor announced that his majesty would permit the nobles and the clergy to put on their hats. The third estate, however, did not propose to have the clergy and the nobility so set apart from the commons, and they at once followed the example of the upper orders and covered their heads.[53]

The guard of the seals then read his address, but the majority of the deputies profited little by it as he could be heard only by the few who were near him.[54] After eulogizing the king, he reviewed certain phases of French history, mentioning especially the trouble which resulted from the "frivolous discussions" that arose in the last states general, and also the work of the assembly of notables. He spoke of the delay in summoning the estates, giving as a reason for this the time it had taken to determine exactly what customs had been followed in the last session of the states general. The speaker then called attention to the fact that double representation had been allowed the third estate in spite of historical precedent, but added that in granting this, the king had not changed the form of deliberation; that while the vote by head might have some advantages, the king wished to have it used only with the consent of the states general and the approval of his majesty. This was the first direct blow at the third

[51] *Discours du Roi*, 3. "Je connais l'autorité et la puissance d'un roi juste au milieu d'un peuple fidèle et attaché de tout temps aux principes de la monarchie; ils ont fait la gloire et l'éclat de la France. Je dois en être le soutien et je le serai constamment."

[52] *Discours du roi*, 3–6.

[53] Lameth, Alexander, *Histoire de l'assemblée constituante*, I, 4.

[54] Biauzat, II, 29; Grimm, V, 129; Boullé in *Revue de la révolution*, X, *Documents inédits*, 168.

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estate and would doubtless have aroused their indignation had the majority of them been able to hear what was being said. The guard of the seals then indicated the various matters that should be considered by the states general, mentioning such things as the public credit, education, administration of justice, but not a word in regard to the reformation of the fundamental constitution of France; instead, he called upon the deputies to reject "dangerous innovations" which were being prepared by the "enemies of the nation." He pleaded for concord in the assembly and suggested that if trouble should arise the deputies of the clergy were the ones who would be expected to act as peacemakers. The speaker closed his address by announcing that it was the intention of the king that the deputies assemble the next day for the purpose of verifying their credentials.[55]

Next came the discourse to which the deputies of the third estate had looked forward with keenest interest, the address of Necker, the man in whom they had the greatest confidence and whom they then believed to be their friend. So far there had been nothing said regarding the constitution, the thing in which the commons were most interested. Surely Necker would have something of interest to say on the subject, some plan to offer for the reorganization of the government. But the commons were to be disappointed. In a speech that lasted about three hours,[56] Necker did not mention constitutional reforms. On the contrary, there were passages that were clearly reactionary.

After reading for about half an hour, Necker turned his manuscript over to a substitute who completed the reading of the discourse.[57] The greater part of the address had to do with the

[55] *Discours de M. le garde des sceaux in Ouverture des états-généraux, 7–22.*

[56] Grimm, V, 129; Biauzat, II, 29; *Récit des séances des députés des communes,* 5; Duquesnoy, I, 7.

[57] Biauzat, II, 30; *Journal des états-généraux,* I, 3; Young, 161: "Concerning it [his speech] there is an anecdote worth inserting; he knew his voice would not enable him to go through the whole of it, in so large a room, and to so numerous an assembly; and therefore he spoke to Mons. de Broussonnet, of the academy of sciences and secretary to the royal society of agriculture, to be in readiness to read it for him. He had been

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financial situation. The amount of the deficit was indicated and means pointed out which might be used to relieve it. In the course of this discussion, Necker criticized those bailliages which had indicated in their instructions to their representatives that the financial condition was of secondary importance.[58] As far as the government was concerned, nothing was more urgent than the financial affairs of the nation, but the people of France were much more interested in the promised constitutional changes. Moreover, while Necker emphasized the necessity of measures being taken to relieve the financial situation, he also attempted to show that the states general had been called together, not because the king had been forced to take this action on account of the condition of the finances of the realm, but simply because of the monarch's generosity and good will toward his subjects.[59] The speaker pointed out in detail the various means which the king might have used to relieve the financial difficulties; he did not explain, however, why these had not been employed by the government. The logical deduction from Necker's statement that the calling of the states general was not due to necessity, but merely to the good will of the monarch, would be that if the king

present at an annual general meeting of that society when Mons. de Broussonnet had read a discourse with a powerful piercing voice, that was heard distinctly to the greatest distance. This gentleman attended him several times to takes his instructions and to be sure of understanding the interlineations that were made, even after the speech was finished. M. Broussonnet was with him the evening before the assembly of the states, at nine o'clock: and next day, when he came to read it in public, he found still more corrections and alterations, which Mons. Necker had made after quitting him; they were chiefly in style and show how solicitous he was in regard to the form and decoration of his matter: the ideas in my opinion wanted this attention more than the style. Mons. Broussonnet himself told me this little anecdote."

[58] *Discours de M. le dirécteur-général des finances* in *Ouverture des états-généraux*, 23–118.

[59] *Discours de M. le dirécteur-général des finances*, 66. Necker worded this assertion thus: "Enfin, Messieurs, et il est bon de vous le faire observer afin que vous aimiez encore davantage votre auguste monarque, ce n'est pas à la necessité absolue d'un secours d'argent que vous devez le précieux avantage d'être rassemblée par sa majesté en états-généraux."

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did not actually need the estates they might be dismissed at pleasure. Naturally, the deputies of the third estate did not relish such a thought as this.[60]

Necker pleaded for union among the deputies, begging them to forget individual interests in the concern for the great affairs of the nation. He then pointed out the things that should be considered by the assembly. These matters had to do almost entirely with financial reforms.[61] He urged the deputies to choose from the instructions given them by their constituents, those which were the most pressing, and to carry out these first, Necker's idea of the "most pressing" being, of course, those which would lead most quickly to the relief of the financial situation.[62]

Near the close of the address, the question of voting by head or by order was touched upon. Before dealing with this question, which he evidently realized was a delicate one, Necker stated that had he followed his own inclinations in the matter, he would have avoided discussing the question, but that the king had ordered him to take it up.[63] Necker then declared that the three orders ought to be separated at first, in order to give an opportunity to the upper orders to renounce their pecuniary privileges of their own free will. "No one among you, gentlemen," he declared, "could, with justice, try to deprive the two first orders of the merit of a generous sacrifice; it would be depriving them of it, however, it would at least dim the glory of it, to submit the

[60] Biauzat, II, 30; Duquesnoy, I, 7.

[61] *Discours de M. le directeur-général des finances*, 77–102.

[62] *Ibid.*, 102.

[63] *Discours de M. le directeur-général des finances*, 109. The following is the text of Necker's speech on this point: "Sa majesté a donc fixé son attention sur des préliminaires dont les conséquences peuvent être si grandes; et ce n'est pas encore cependant comme votre souverain, c'est comme le premier tuteur des interets de la nation, c'est comme la plus fidèle protecteur de la félicité publique que le roi m'a ordonné de vous presenter un petit nombre de réflexions. J'aurais aimé peut-être à en être dispensé, car on ne s'approche jamais sans danger de ses questions délicates dont l'esprit de parti s'est déjà rendu maître; mais il faut rejeter avec dédain toutes les considérations personnelles qui font toujours embarras dans la route du bien public."

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decision to the deliberation of the three orders united; a possession which goes back to the remotest times of the monarchy is a right which becomes still more worthy of respect at the moment when those who enjoy it are disposed to renounce it. It is just, then, it is right, that the deputies of the commons leave to the representatives of the first two orders all the honor of such a sacrifice."[64] Necker stated that after this had been done, the privileged orders would often "be invited to unite with the representatives of the people," and then they could "examine all forms of deliberation." He then attempted to show that the separation into three orders was really a disadvantage to the king and an aid to revolutionary spirits, as the king would be better able to control a single assembly than the three separate orders; hence, according to this view, the king was really making a concession to the radical forces in having the orders meet separately.[65]

Necker's address was a great disappointment to the deputies of the third estate. They had been led to expect much from him, and they had received nothing. It was perfectly clear, moreover, that the government had no intention of agreeing to the demands of the third estate for a union of the orders and vote by head. Various contemporary writers mention complaints that were heard because Necker had said nothing in regard to the constitution, because of his attitude toward the vote by head and the general reactionary tone of his discourse.[66]

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[64] *Discours de M. le directeur-général des finances,* 110, 111. "Pensonne d'entre vous, Messieurs, ne pourrait avec justice, essayer de ravir aux deux premiers ordres le mérite d'un généreux sacrifice; et ce serait cependant les en priver, ce serait du moins en obscurcir l'éclat, que de soumettre cette décision à la délibération des trois ordres réunis; une possession qui remonte aux temps les plus reculis de la monarchie, est un titre qui devient encore plus digne de respect au moment où ceux qui en jouissent sont disposés à y renoncer; il est donc juste, il est raisonnable que les députés des communes laissent aux représentants des deux premiers ordres tout l'honneur d'un tel sacrifice."

[65] *Ibid.,* 113.

[66] Biauzat, II, 30; Duquesnoy, II, 7, 8; Jefferson, II, 760; Mercy, II, 239; Boullé in *Revue de la révolution,* X, *Documents inédits,* 168; *Bulletins d'un agent secret* in *La révolution française,* III, 352.

Duquesnoy states the feeling of the third estate thus: "En un mot, tout

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At the close of Necker's speech, the king and the queen with their court, arose and left the hall. The session was at an end.[67]

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y a paru prévention pour le roi et les deux premiers ordres. Après avoir entraîné le tiers dans des opinions exagérés par son *Résultat,* après avoir donné dans les provinces les espérances les plus fortes, il parâit se démentir."

A question arises as to the authorship of the *Bulletins d'un agent secret,* published in the *Révolution française.* Brette, in an introduction to the bulletins (pages 348–350), attributes them to a sort of reporter, "*un de ces faméliques écrivains,*" who were making a business of writing up the events of the revolution. He is of the opinion that the bulletins were addressed to one of the ministers, probably Puységur. It is evident that Brette has made a mistake both in regard to the authorship of the *bulletins* and also as to the person to whom they were addressed. In bulletin 4, pages 354, 355, the writer urges the person to whom the bulletins are addressed to stop the publication of Necker's address, for the sake of saving Necker from the consequences of such a publication. He closes by saying, "Je regrette qu'il ait fait ce discours et tous ses amis pensent comme moi." This could hardly have been written by an enemy of Necker's. A still more conclusive proof that the bulletins were written by a friend of Necker's and were not addressed to Puységur is found in bulletin 37, page 531. We read: "Tout ce qui tient à M. Necker est devenu suspect. Nous le disons avec peine, mais nous devons le dire. Les liaisons intimes de M. le comte de Montmorin avec M. Necker font le plus grand tort à M. le comte; on craint qu'il ne soit entrainé dans la chute du directeur général et cette chute est regardée comme certaine." No one would have written this to a person who was as hostile to Montmorin as was Puységur. There is evidence that the writer of these bulletins was a man of some importance and no mere scribbler. In bulletin 25, page 463, he speaks of attending a meeting at Versailles of twenty-five deputies of the third estate. No common reporter would have been at such a meeting. It is probable that these bulletins were addressed to someone in the foreign department, possibly to Rayneval. Brette has the following to say in regard to this: "Ces bulletins journaliers dont nous commençons aujourd'hui la publication sont ainsi décrits dans l'inventaire sommaire des affaires étrangères: 'Annee 1789. Relation des événements depuis le 20 mai jusqu'au 15 juillet envoyée à M. de Puységur ou à M. de Rayneval.'"

[67] Gouvernor Morris, in his *Diary and Letters* (I, 76), says in regard to the applause for the queen: "After the speech is over the king rises to depart, and receives a long and affecting '*Vive le roi.*' The queen rises and to my great satisfaction she hears for the first time in several months, the sound of '*Vive la reine!*' She makes a low courtesy and this produces a louder acclamation and this a lower courtesy."

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II

THE BEGINNING OF THE STRUGGLE OVER VERIFICATION OF CREDENTIALS

The deputies of the commons realized that in order to have their superior number count for anything the assembly must meet in one chamber and vote by head, otherwise the vote of the two upper orders would cancel that of the third estate. The addresses which had been made on May 5, indicated plainly that the government was in favor of the states general being organized in separate chambers. The question was whether or not the third estate could force the privileged orders and the government to yield on this point. If they could not, the double representation of the commons would be useless.

The deputies had been ordered to meet May 6 for the verification of credentials.[1] Naturally, the first question that arose was whether that verification was to take place in the orders meeting separately, or in an assembly composed of the three orders united. The government had evaded the issue, not giving explicit directions, although its intentions were probably clear to everyone. If the third estate yielded on this point and allowed the verification to take place in the different orders, they would recognize the right of the upper orders to organize as separate chambers and their cause would be lost. Hence the first battle was to be fought over the manner of verifying credentials.

On Wednesday morning, May 6, the government posted a placard, summoning the orders to meet that day and stating that "the place" intended for them would be ready at nine o'clock.[2]

[1] *Discours de M. le garde des sceaux* in *Ouverture des états-généraux*, 22.

[2] *Récit des séances des députés des communes*, 6; *Lettres du Comte de Mirabeau*, No. 1, 9; Méjan, *Collection complète des travaux de M. Mirabeau l'âiné*, I, 179. Méjan gives the text of this proclamation. It reads as follows: "Sa majesté ayant fait connaître aux députés des trois ordres, l'intention où elle était, qu'ils s'assemblassent dès aujourd'hui, 6 mai, les députés sont avertis que le local désigné à les recevoir, sera prêt à neuf heures du matin."

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There was nothing to indicate whether the orders were to meet separately or in one hall, but evidently it was clearly understood by the deputies of the upper orders, at least, that they were not to meet in the large hall with the third estate, for when the deputies of the third estate assembled that morning, the two upper orders were absent. The commons could not have been greatly surprised at this, considering the attitude of the government as shown in the session of May 5.[3] However, if the deputies of the third estate were not surprised at the absence of the upper orders, this did not make them any more willing to accept the situation as they found it.[4]

The third estate met about nine o'clock in the hall that had been used the previous day for the opening session.[5] Biauazt says that for nearly an hour after the time set for the opening of the session, there were workmen in the hall clearing away the material that had been used in the ceremonies of the previous day, and yet the government had announced that the hall would be ready at nine o'clock.[6] The confusion incident to the first session was great enough, without being added to by the noise of the workmen. In a letter which is found in Mirabeau's journal, the writer pictures the scene as follows: "Imagine more than five hundred persons thrown into one hall, without knowing each other, coming from different places, without a head, without organization, all free, all equal, none having the right to com-

[3] Rabaut, *Précis*, 74. The statement is made by this writer that the commons had assembled by provinces on the evening of May 5 and had agreed to unite in the hall of the estates general, which they regarded as the hall of the national assembly, and there wait for the other orders to join them and deliberate in common. Since no other contemporary writer mentions such a meeting as this, it seems probable that Rabaut was referring to a meeting of the deputies of a certain province only, probably those of Bretagne.

[4] *Récit des séances des députés des communes*, 6; *Lettres du Comte de Mirabeau*, No. 2, 10. The *Récit* says that there was a general murmur of disapproval because of the absence of the third estate; Mirabeau says that they waited until two o'clock for the deputies of the upper orders to join them.

[5] Biauzat, II, 31; *Lettres du Comte de Mirabeau*, No. 1, 10.

[6] Biauzat, II, 31.

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mand; none feeling themselves obliged to obey and all wishing, *à la française,* to be heard before listening."[7] Biauzat says that the discussions in the sénéchausées and bailliages were more orderly than in this assembly of the deputies of the nation,[8] while Duquesnoy states that the tumult was the sort that one would expect to find in the market place.[9] The arrangement of seats did not serve to lessen the confusion. Instead of being arranged in amphitheatre style, they were all on a level, making it extremely difficult for the person speaking to be seen or heard by his colleagues.[10]

The deputies managed at length to provide themselves with a presiding officer.[11] There is no indication, however, that they succeeded in establishing any degree of order for several sessions. In choosing this officer, care was taken to use the term "dean" instead of "president," the person selected being the oldest man in the assembly. The policy of the third estate was already

[7] *Lettres du Comte de Mirabeau,* No. 2, 14. The letter that is here referred to is included in one of Mirabeau's letters to his constituents, and is supposed to have been written by an eye-witness of the event to an English lord. The supposed reply of the lord is also given. Cherest (III, 11) takes the view that the answer by the "English lord" was written by Mirabeau himself, but offers no proof for his statement.

[8] Biauzat, II, 31. Biauzat discusses the situation in the following manner: "Estimez vos compatriotes auvergnats avec lesquelles vous avez disserté soit à la ville, soit à la sénéchausée; les choses s'y passaient plus tranquillement, en meilleur ordre et aussi sensément, sans distinction, que dans cette première assemblée du royaume."

[9] Duquesnoy, I, 10. Duquesnoy has this to say of the deliberations of the third estate: "Enfin on s'est séparé à trois heures, après avoir passé le temps en vains débats de paroles, en décisions frivoles et puériles, faites avec un désordre, un tumulte qu'on ne s'attendrait pas à trouver dans une assemblée des Halles."

[10] Biauzat, II, 31; *Lettres du Comte de Mirabeau,* No. 2, 23.

[11] *Récit des séances des députés des communes,* 6; Biauzat, II, 31; *Lettres du Comte de Mirabeau,* No. 2, 23. It is impossible to establish exactly the order of events in these opening days of the third estate. When it is taken into consideration how much confusion there was in the first sessions, it is easy to see why the accounts are likely to differ in the order of events. It is doubtful if, in the excitement of these first days, anyone could have told at the close of any particular session just what had taken place and the exact order in which the events had occurred.

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beginning to appear. They were, in their first session, carefully avoiding anything that could be used by the privileged orders to prove that the commons had organized as a separate chamber.

After the dean had taken his place, a younger man was selected to do the talking for him, as the dean was so feeble he could not make himself heard.[12] The dean was also given six other assistants who were evidently to act as his advisors and to aid in keeping order.[13] In spite of these preliminary steps, which had given the third estate the means of maintaining at least a reasonable amount of order, the proceedings of the day were marked by disorder and confusion. Biauzat says that at one time, in attempting to speak, it was necessary for him to mount the steps of the gallery in order to be heard.[14]

The first question to be settled was what should be done in the absence of the other two orders. The verification of credentials was naturally the first thing to take up, but the commons maintained that a legal verification could take place only in an assembly composed of the three orders united. To abandon this proposition meant to recognize the legality of separate chambers and this would mean defeat on the question of vote by head. The problem was how to force the privileged orders to agree to the verification of credentials in common.

During the course of the discussion that arose over this matter, Malouet proposed that a deputation should be sent to the two upper orders, telling them that the commons had assembled in the place set apart for the national assembly and inviting them to unite with the third estate for the verification of credentials.[15] Although such a motion was apparently harmless enough, it met

[12] Biauzat, II, 32; *Lettres du Comte de Mirabeau,* No. 2, 15. Biauzat says that the young man offered to fill this position, while Mirabeau states that the dean asked for some one to do this work.

[13] Biauzat, II, 32; *Lettres du Comte de Mirabeau,* No. 2, 15; *Récit des séances des députés des communes,* 6.

[14] Biauzat, II, 31.

[15] *Récit des séances des députés des communes,* 6; *Lettres du Comte de Mirabeau,* No. 2, 16; Boullé in *Revue de la révolution,* X, *Documents inédits,* 167; Duquesnoy, I, 9, 10.

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with strong opposition, especially from Mounier and Mirabeau.[16] They saw what might be the result of it. If the third estate took steps that might serve as proof that they had organized as a separate chamber, the other orders would not be slow to take advantage of the situation. The sending of a deputation to the upper orders could easily be used as proof that the commons were organized. It was the policy of those opposing Malouet's motion to insist that the third estate was not an order, that it was unorganized and had no power even to send a deputation to the other orders.[17] The result of the discussion was that it was decided to take no action whatever, but simply to wait for the two upper orders to come to terms.[18]

It was evidently soon after this decision had been reached that the question came up as to what should be done with certain letters addressed to the third estate.[19] Biauzat says that the letters were stamped at Paris, and on one was written, "Important and very pressing information." The proposal to open the letters met with strong opposition, some of the deputies contending that there was some intrigue connected with the letters, for otherwise the persons who wrote them would have had the matter contained in them brought up in a regular manner by some of the deputies. The first decision was against opening the letters. The subject, however, was brought up repeatedly,

[16] Duquesnoy, I, 9; Biauzat, II, 36; *Moniteur,* I, 27. Duquesnoy and Biauzat agree that Mirabeau opposed this motion. The *Moniteur* alone mentions Mounier's position. I have not discovered the source used by the editors for this statement. It will be remembered that the numbers of the *Moniteur* for May to November, 1789, were not composed until 1795.

[17] Duquesnoy, I, 10; *Lettres du Comte de Mirabeau,* No. 1, 12. Duquesnoy says: "Le comte de Mirabeau s'y opposait, sous prétexte que nous ne sommes pas une assemblée, mais une agrégation, une collection d'hommes, un club d'amis, qui ne peuvent pas faire de députation."

[18] Biauzat, II, 33; Duquesnoy, I, 9; *Récit des séances des députés des communes,* 6; Boullé in *Revue de la révolution,* X, *Documents inédits,* 169.

[19] Biauzat, II, 33, 34; *Lettres de Mirabeau,* No. 2, 17. It is not possible to determine exactly the order of events here. In the *Lettres de Mirabeau,* the writer makes no attempt to give the events in chronological order, and hence, in this instance, Biauzat is the only source by which to determine the order of events.

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Biauzat says, by those "who were suspiciously interested" in the matter, until finally "a multitude of hats were raised, signifying a desire to have the letters read." One of the assistants of the dean had advanced to read them, but at this point Biauzat, according to his own account, interfered. "I shouted louder than the spokesman," he says, "asking permission to speak. I was excited and that helped to produce silence." He then addressed his colleagues, expressing his suspicion of the letters[20] and urging the deputies not to recognize these letters, addressed to them as a separate order, when the assembly had already virtually declared itself an unorganized body of deputies and had denied that it was an "order" of the states general. Biauzat argued that the reading of the letters, aside from being dangerous, would be useless, since, to be consistent with their previous decision, they could take no action in regard to their contents. He was successful in convincing the deputies of the wisdom of his attitude and the letters remained unopened. Thus the third estate, by refusing to recognize these letters addressed to it as an order of the states general, had emphasized its position as an unorganized body of deputies, waiting for their absent colleagues.[21]

After this incident, according to Biauzat, Malouet again brought up the proposition to send a deputation to the other orders to invite them to join the third estate. He warned the deputies that by taking too radical a position, they were in danger of setting fire to Paris and all France.[22] Again Mirabeau objected, urging the assembly to adopt a policy of absolute inactivity,[23] and then Biauzat, according to his own account, pro-

[20] Biauzat (II, 34) says: "Plusieurs disaient avoir aperçu dans differents mouvements funestes, des tentatives qui avaient eu pour but de jeter la pomme de discord entre les Français; qu'il faillait craindre de trouver ce fruit empoisonné dans ces lettres."

[21] Biauzat, II, 24; *Lettres du Comte de Mirabeau,* No. 2, 17. Nothing more was heard of the letters.

[22] Biauzat, II, 35.

[23] Biauzat, II, 35; *Lettres du Comte de Mirabeau,* No. 1, 12. Mirabeau explains why inactivity on the part of the third estate was the wise policy to adopt, but he does not say that he made a speech at this time. However, since he was so earnest in his attempt to persuade the assembly to

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posed to compromise between Malouet's proposal to send a deputation and Mirabeau's policy of inaction, by postponing a final decision until the next day, when they would be better informed as to what had been done in the other orders. Biauzat says that this proposition was carried by shouts of "*à demain, à demain!*"[24]

Duquesnoy states that a proposition was made in this session to determine some order of business—to establish a "règlement"—but the proposition was not accepted.[25] Mirabeau says that it was also in this first session that the suggestion was made that the third estate should declare itself the national assembly.[26] But the commons were by no means ready to take this step and be responsible for all the consequences that might follow. Thus the session ended. Nothing had been done that could in any way compromise the third estate. The commons had met, had found that their colleagues of the privileged orders were absent and had taken the attitude that they were powerless to pass any decrees or adopt any active measures until the absent deputies should be present.

In the account given in the *Récit,* it is stated that before the third estate adjourned, an announcement was made that the privileged orders had decided to verify their credentials in their respective orders.[27] It may be imagined what the feelings of the deputies were on hearing this and how eager they must have been to know whether the report was true or not. Had the privileged orders dared to place themselves squarely against the commons and thus end all hope of a peaceful settlement of the issue?

follow this plan, it is likely that Biauzat is correct in crediting him with a speech.

[24] Biauzat, II, 37.

[25] Duquesnoy, I, 10.

[26] *Lettres du Comte de Mirabeau,* No. 2, 16; Boullé in *Revue de la révolution,* X, *Documents inédits,* 168. Boullé states that this was suggested in case of a total defection on the part of the upper orders: "On s'arrêta donc à temporiser jusqu'à ce que les intentions des deux autres ordres fussent mieux connues, disait on, en cas d'une défection totale de leur part, à ce constituer sans eux en corps de nation et à former seuls les états-généraux, parti extrême auquel on ne devait point d'abord recourir."

[27] *Récit des séances des députés des communes,* 7.

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The clergy met that same day in a hall that had been prepared for them in the Salle des Menus. The first event recorded, in the accounts of the day's proceedings, is an address by the Cardinal de Rochefoucauld, who had been made presiding officer of the chamber of the clergy.[28] Thibault says that the cardinal stated that he held his position because of his age and only temporarily. He exhorted the deputies to give an example of peace and harmony, and announced that mass would be held each day at nine o'clock, for the purpose of beseeching Heaven to grant its blessings to the states general and bring peace and union to the orders. The president closed his remarks by announcing that they would proceed with the verification of credentials.[29]

When the clergy took up the discussion as to how the credentials should be verified, it became evident that there were two factions in the assembly, one favoring the verification in the chamber of the clergy, regardless of the other orders, and the other insisting that the credentials ought to be verified in the presence of the three orders united. The Archbishop of Vienne made a motion that the clergy should verify its credentials in common with the other two orders.[30] The majority of the deputies, however, were not ready to take this decisive step, neither were they willing to place themselves in direct opposition to the third estate. The result was that the clergy decided to verify their credentials provisionally.[31]

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[28] Thibault, 180; Vallet, *Récit*, 51; Coster, 6 mai; *Lettres du Comte de Mirabeau*, No. 1, 13.

The assembly of the clergy, having only a provisional organization, had no regular secretary and therefore no *Procès-verbal*. However, there is a good collection of *Journaux*, kept by the members of the clergy. Those used in this study were written by Thibault, Coster and Vallet, and a *Procès-verbal historique*, which Brette attributes to Abbé Rangeard (Brette, *Les constituents, Avertissement*, VI). Thibault was one of the temporary secretaries of the clergy and his account was doubtless written as it would have been had he been a permanent secretary, drawing up a *Procès-verbal*.

[29] Thibault, 180.

[30] Duquesnoy, I, 10; Coster, 6 mai.

[31] Thibault, 180; Coster, 6 mai; Boullé, in *Revue de la révolution*, X, *Documents inédits*, 170; Duquesnoy, I, 10; Biauzat, II, 36; *Lettres du Comte de Mirabeau*, No. 1, 13. The accounts vary as to the vote. Mira-

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Jallet relates that the question also arose as to the nature of the organization of the chamber. Could the clergy organize permanently? It was held by certain members that no permanent organization could be established until the credentials were legally verified and since the decision had been in favor of provisional verification, the organization could not be permanent. Jallet states that it was finally agreed that they should say that the order was "formed" but not "organized."[82] Thus the clergy had begun by adopting a policy which did not commit them definitely to either a radical or a reactionary course. Their temporary organization allowed them to pass any decrees they saw fit and at the same time it did not prevent them, if they so desired, from agreeing later to the verification of credentials in common with the other two orders. The presence of a large number of curés in the order of the clergy was doubtless responsible for this attitude of compromise; their sympathies were with the third estate and they were able to keep the higher clergy from binding the order irrevocably to the side of the nobles.

In the assembly of the nobility there had been nothing of this conciliatory attitude. M. Montboissier, their oldest member, was chosen president.[83] An account of his opening address is given in *Procès-verbal* of the nobility.[84] It is here stated that he expressed his pleasure because his advanced age had given him the honor of being president of this assembly at a time when the nobles all over the country had voiced such generous and patriotic sentiments, evidently a reference to the promises of the nobility that they would renounce their pecuniary privileges. He spoke of the monarch's need of the loyalty of the nobility, asserting that the power of the crown was never more necessary than at that moment, but that it was in danger. The speaker declared that

beau says it was 133 to 114; Coster, 130 to 114; Biauzat, that it was decided by a small majority; Thibault says that it was decided by a plurality of 30 or 40; Boullé states that they decided upon provisional verification.

[82] Jallet, 51.

[83] *Procès-verbal de la noblesse,* 1; *Lettres du Comte de Mirabeau,* No. 1, 13; Duquesnoy, I, 10.

[84] *Procès-verbal de la noblesse,* 1.

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the counsellors of the king had tried more than once to betray the people, but that they had not yet succeeded. He prophesied that the brilliant days of national glory would return, and that there would be "abundance and glory at home" and "power and respect abroad."

The order next chose a secretary.[35] The *Procès-verbal* of the nobility states that the president appointed a certain deputy to take this place, but the person selected refused on the grounds that the order had no right to choose any officers as long as the deputies of Paris, owing to the delay in their elections, were unable to be present.[36] The assembly, however, decided to choose a secretary.[37] The *Procès-verbal* says that the person selected for this position was the oldest one of the men who had already filled similar positions in the assemblies of their bailliages.[38]

The question of verification of credentials was next taken up, according to the order of events as given in the *Procès-verbal.* It was proposed to appoint a committee to verify the credentials, and again the objection was raised against any action being taken in the necessary absence of the deputies from Paris.[39] It was decided, however, to appoint the committee.[40] After this committee, which consisted of the twelve oldest men,[41] had been selected, the question arose as to how the credentials should be verified; should the nobility proceed alone with the verification, regardless of the other two orders, or should the work be done jointly with the other two orders?[42] A vigorous debate seems

[35] *Ibid.*, 3; Duquesnoy, I, 10.

[36] *Procès-verbal de la noblesse,* 3.

[37] *Procès-verbal de la noblesse,* 3; Manuscript copy of the *Procès-verbal de la noblesse,* 6 mai. Duquesnoy, I, 10. In the printed *Procès-verbal* it is stated that this secretary was a temporary officer, while in the manuscript nothing is said of his being chosen temporarily.

[38] *Procès-verbal de la noblesse,* 3.

[39] *Procès-verbal de la noblesse,* 3.

[40] *Ibid.; Lettres du Comte de Mirabeau,* 17; Duquesnoy, I, 10. Only the *Procès-verbal* mentions the objection concerning the absence of the Paris deputation.

[41] *Lettres du Comte de Mirabeau,* 17; *Procès-verbal de la noblesse,* 4.

[42] *Ibid.* The order of events here is doubtful. The account written by

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to have arisen over this question. Mirabeau, in his *Letters,* summarizes the arguments advanced on both sides. Those favoring separate verification, he says, declared, first, that since the deputies were elected by the order of the nobility, their credentials should be verified by a committee from that order; second, that the nobility could not pass upon the legality of the credentials of the other two orders and therefore could not submit their credentials to committees from the other orders; third, that the nobility alone was able to decide upon the titles by which one might be admitted to their order; and fourth, that the verification of credentials was not important enough to consume a great deal of time and, therefore, should be carried on in the separate orders to shorten the operation. Mirabeau then takes up the other side of the question, giving the arguments in favor of common verification. First, the deputies had been elected to the states general, and, therefore, it was the duty of the states general, composed of the three orders, to verify the credentials; and second, since the election had been sanctioned by the three orders of each bailliage, and since the deputies had taken the oath in the presence of the three orders, it was before a committee of the three orders that the credentials should be verified.[43]

Those favoring verification in common formed but a small minority of the order, and the result was that the nobles decided to verify their credentials in their own chamber, without regard to their colleagues of the other two orders.[44] Mirabeau says that the vote stood 47 to 188.[45] He mentions among the minority

Mirabeau would indicate that this discussion came up before the committee was appointed, while the *Procès-verbal* states that it took place afterward. Since the *Procès-verbal* was drawn up by the secretary of the order, and since Mirabeau was not present at the session, it is probable that the *Procès-verbal* is the more reliable on this point.

[43] *Lettres de Mirabeau,* No. 1, 14, 15.

[44] *Procès-verbal de la noblesse,* 5; *Lettres du Comte de Mirabeau,* No. 1, 15; Biauzat, II, 36.

[45] *Lettres du Comte de Mirabeau,* No. 1, 16; Biauzat, II, 36. Biauzat simply says: "à la grande majorité, et contre quarante-cinq voix seulement de bien pensants."

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the Vicomte de Castellane, the Duc de Liancourt and the Marquis de la Fayette.

After having settled the question of the verification of credentials, the nobles adjourned until Monday, May 11, in order to give the committee on verification time to inspect the credentials.[46]

Thus the first day had placed the nobility and the third estate in open opposition to each other, the third estate insisting that unless the credentials were verified in the states general, composed of the three orders united, no legal organization was possible and emphasizing its principles by adopting a policy of inaction; the nobility, on the other hand, having decided that the credentials should be verified by each order separately, had taken the steps necessary to carry out its decision. The clergy, meanwhile, stood on the middle ground, pledged to neither party. Was there any way of bringing about a reconciliation between the opposing forces, the commons and the nobles? The events of the following days were largely the result of attempts to answer this question.

The adjournment of the nobility until May 11 left affairs in the hands of the third estate from May 7 to May 11. The third estate met again on the morning of May 7. Matters were in no better shape than they had been in the previous session. The other orders were still absent, and the confusion had lessened but little.[47] Biauzat asserts that speeches were made by those who had voices strong enough to make themselves heard in the uproar.[48] Malouet renewed his motion to send a deputation to invite the other two orders to join the third estate.[49] The *Récit*

[46] *Procès-verbal de la noblesse,* 5; Duquesnoy, I, 10.

[47] Biauzat, II, 38; Duquesnoy, I, 10.

[48] Biauzat, II, 38.

[49] Biauzat, II, 38; *Récit des séances des députés des communes,* 7; Duquesnoy, I, 10. Biauzat alone states that it was Malouet who again brought up this motion. The *Récit,* however, says that a deputy from Auvergne advocated this action, and as Malouet came from Riom, a city in Auvergne, it is safe to say that he is the deputy who is meant here. Duquesnoy says concerning the events of the day: "Même impossibilité d'établir de l'ordre, même fureur du comte de Mirabeau, même sagesse, même raison, même modération de M. Malouet."

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gives a summary of the arguments advanced by a deputy from Auvergne, presumably Malouet. He declared that he was interested in hastening the work for which all France waited with impatience; he insisted that there could be no danger in sending the deputation, its object being merely to declare to the other orders that the commons could proceed with the verification of credentials only in the presence of the three orders united and, hence, such a deputation could not have the effect of constituting the commons a separate order. The speaker argued that such an act on the part of the third estate would, on the one hand, be evidence of the sincere desire of the deputies to accomplish the work for which they were assembled and also, on the other hand, it would lay the blame for this "inexcusable delay" on the shoulders of the clergy and of the nobility.[50]

Mirabeau again led the opposition against Malouet's motion.[51] The arguments advanced against the motion, according to the *Récit,* were that the commons could not send a deputation so long as their credentials were not verified, since a deputation carried the idea of an organized body back of it and that inactivity on the part of the commons was the best means of bringing success to the third estate and of forcing the privileged orders to accept their demands.[52]

[50] *Récit des séances des députés des communes,* 7. The account ends thus: "Il a terminé en disant que les communes, par cette démarche, d'un côté, mettraient en évidence un ardent désir de remplir l'object pour lequel elles étaient assemblées; et de l'autre, établiraient le clergé et la noblesse dans une démeure inexcusable."

[51] Duquesnoy, I, 10; Biauzat, II, 38; *Lettres du Comte de Mirabeau,* No. 1, 11 (Letter to an English lord). Biauzat says that Mirabeau took the opposing side; Duquesnoy simply speaks of the "fureur" of Mirabeau. While it is possible that the letter here referred to in the collection of Mirabeau's letters was not written by Mirabeau, it evidently expresses his opinions. The writer has the following to say in regard to the attitude of the third estate: "Cette conduite est sage; car pour répéter une expression heureuse du discours du directeur-général, *il ne faut pas être envieux du temps;* lui seul propage l'instruction, établit l'harmonie, appaise les discords. Toute démarche des communes, les eût en compromis en donnant des avantages et des prétextes à leur adversaires, ou exposés à des résistances plus actives, à des contrariétés plus ardentes."

[52] *Récit des séances des députés des communes,* 7, 8.

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Biauzat states that finally it was proposed to vote by "yes" or "no" on the question, and the dean proceeded to take the vote in this manner, a process which was extremely tedious.[53] It was during this time that Malouet advanced towards the place where the principal speakers had formed the habit of taking their places when about to address the assembly. Biauzat was so irritated at the thought of Malouet's making another speech that he walked to the president's desk, reaching it before Malouet. He protested against Malouet's occupying the attention of the assembly to such an extent and declared that the deputies were tired of having to choose between listening to Malouet or to Mirabeau. Biauzat says that he demanded that each deputy should be given the opportunity to speak when his turn came, and that he pointed out that there were others besides Malouet and Mirabeau who would like an opportunity to express their opinions. Biauzat states that Malouet was somewhat subdued by this attack.[54]

The vote on the question does not seem to have been completed, but instead a new proposition was brought up which served as a solution for the problem. It was suggested during the discussion of Malouet's motion, that certain deputies be "*allowed*" to go to the other orders, that is, that the third estate should not appoint a formal deputation, but should simply permit certain deputies to inform the upper orders of the condition of affairs.[55] The deputies from Dauphiné were among those who supported this proposition,[56] and one of them (Mounier, according to Biauzat) stated that in a conversation with the Archbishop of Vienne, he had learned that the deputies of the clergy were favorably inclined towards uniting with the third estate.[57] The

[53] Biauzat, II, 39.

[54] *Ibid.*

[55] *Ibid.*; *Récit des séances des députés des communes*, 8.

[56] *Ibid.*

[57] Biauzat, II, 39; *Récit des séances des députés des communes*, 8. The sources are apparently contradictory as to the order of events here. The *Récit* says that this proposition for an informal deputation came before the speech of the deputy of Dauphiné. Biauzat, on the other hand, gives the impression that it came afterwards as a result of the address of the deputy from Dauphiné.

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Récit adds that this same member from Dauphiné asserted that the clergy from Dauphiné, at least, would come.[58] The result of the discussion was that a deputation of twelve members withdrew to go to the other orders.[59] Mounier was at the head of the deputation.[60] Biauzat says that it also included the dean and ten other deputies.

Presently the deputation returned and gave a report of what they had done. The nobles, they said, were not assembled, but they had had an interview with the committee on verification of credentials, the committee having been at work in the hall of the nobles.[61] These commissioners of the nobility, according to the *Récit,* informed the deputation from the third estate that their order would not meet until Monday, but they said that, at

[58] *Récit des séances des députés des communes,* 8.

[59] *Récit des séances des députés des communes,* 8; Duquesnoy, I, 10; Biauzat, II, 40; *Lettres du Comte de Mirabeau,* No. 2, 2; *Journal des états-généraux,* I, 13; Boullé in *Revue de la révolution,* X, *Documents inédits,* 120. The sources do not agree as to whether this was put to a formal vote. The *Récit* has this to say: "Le dernier avis [that for the deputation] a été soumis au jugement de l'assemblée, et admis à la grande pluralité." Duquesnoy writes: "Enfin, on a emporté, à peu près par force, l'avis de prevenir la noblesse et la clergé que les communes . . . les attendaient pour former l'assemblée." Biauzat: "On cria pour approbation de ce parti. On cria aussi pour improbation. Dans le tapage que formait cette manière de manifester des sentiments contraires, M. Mounier se dépecha avec le doyen et dix autres." Mirabeau speaks of the deputation as "cette prétendue députation à laquelle le clergé aurait bien voulu donner l'existence." The *Journal des états-généraux* says: "Le clergé et la noblesse s'etant séparés des communes, celle-ci ont pensé qu'une invitation d'honnetêté et de déférence pourrait ramener ces deux ordres dans la salle nationale; en conséquence, plusieurs de leurs membres se sont détachés pour aller," etc. Boullé writes: "Après beaucoup de débats, cette motion ayant paru acquérir une sorte de majorité, plusieurs se transportérent," etc.

[60] Duquesnoy, I, 10; Biauzat, II, 39; Jallet, 52.

[61] Biauzat, II, 40; *Récit des séances des députés des communes,* 9; Duquesnoy, I, 10. All the accounts agree that the deputation met certain members of the nobility in the hall of the nobility. The *Récit* states that they were the members of the committee on verification. Since the nobility had adjourned to allow this committee to do its work, it was probably there at this time.

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that time, the nobles should be informed of the request that had come from the third estate.[62] The deputies, in their report, mentioned the courtesy which had been shown them by the commissioners of the nobility, and told how, upon their leaving the hall of the nobles, the commissioners had said to them, "We must leave you, but our hearts follow you."[63] The deputation reported that the clergy had answered the invitation to unite with the third estate by saying that they would deliberate on the matter, and would send their reply later.[64] The third estate had taken the first step towards a settlement of the existing difficulties; it remained to be seen what would be the result of their action.

After the return of the deputation to the other orders, the third estate seems to have been seized with feelings of regret for having allowed the deputies to go.[65] Biauzat says that the eyes of the deputies were opened and that there was a general cry of reproach against the deputation, the commons evidently fearing that this action would make it appear that they were organized as a separate order. Biauzat also says that it was decided that when the clergy should bring their reply, the dean should tell them that the commons were not organized and explain the purpose of the deputation. This same writer states that Mirabeau attempted to put this answer in writing, but discussions arose over every word until finally the idea of writing the reply was given up entirely, lest it should give the impression that they were a "constituted assembly."[66]

Before the clergy brought its formal reply to the request of the third estate, there came into the hall of the commons two curés who asked the deputies of the third estate not to adjourn, as the clergy was at that time deliberating on the reply that they

[62] *Récit des séances des députés des communes,* 9.

[63] Biauzat, II, 40; Duquesnoy, I, 10.

[64] Biauzat, II, 40; Duquesnoy, I, 11; *Récit des séances des députés des communes,* 9. The *Récit* alone says that they promised to send a reply.

[65] Biauzat, II, 40; *Lettres du Comte de Mirabeau,* No. 2, 2; Boullé in *Revue de la révolution,* X, *Documents inédits,* 170.

[66] Biauzat, II, 40.

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should make to the invitation of the third estate.[67] Biauzat says that at this point the members of the third estate shouted that they had sent no one to the clergy, that they did not recognize any chamber of the clergy, that no resolutions could be received by the commons, and that they recognized only the acts which should take place in the national hall.[68]

Shortly after this, the formal deputation came from the clergy.[69] The commons must have awaited their announcement with the keenest interest. Would the clergy accept the invitation of the third estate and join them in their hall, thus defeating the nobles at the very outset, or would they, on the other hand, absolutely refuse to unite with the third estate, insist on separate verification of credentials and thus force the commons to take matters into their own hands and begin open warfare?

It is said that when the deputies from the clergy came into the hall of the third estate, someone called out, "Your places are vacant!", meaning that they should seat themselves in the section that had been occupied by the clergy on the opening day and which the third estate had evidently taken care not to occupy.[70] Biauzat calls attention to the fact that some of the members of the commons had taken the trouble to remove the six seats which were near the dean's chair, and which were intended for the six assistants, lest the deputation from the clergy might take these seats and so avoid taking their places in the section reserved for their order.[71] The third estate was using every opportunity to

[67] Biauzat, II, 41; Vallet, *Souvenirs*, 23.

[68] Biauzat, II, 41. The writer relates this incident in the following manner: "Il s'éleva des voix pour crier que nous n'avions envoyé personne, que nous ne connaissions point de chambre du clergé, que nous ne pouvions point recevoir de délibérations, et que nous n'en connaissions de possible que celles qui seraient faites dans la salle nationale."

[69] *Récit des séances des députés des communes*, 9; Biauzat, II, 41. Biauzat says that the deputation came about half an hour after the curés had come in. The *Récit* states that it came in about half an hour after the return of the deputation that had gone from the third estate.

[70] Biauzat, II, 41; Coster, 7 mai. Coster says that the deputation was given the seats reserved for the clergy, but says nothing of the shouts from the members of the third estate, nor of the removal of the chairs.

[71] Biauzat, II, 41.

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make it clear that the commons were waiting for the other two orders to join them, that nothing could be done without them, and that everything was ready for this union.

It should be noted, however, that in spite of the claims of the third estate that the deputies were no longer representatives of any class, but of the whole nation, they still recognized a distinction between the orders. This is shown by the fact that they had reserved for the upper orders the places they had occupied at the session of May 5. If the commons had followed their claims to their logical conclusion, they would not have recognized a separation into three distinct orders within the hall, any more than they recognized such a distinction outside the hall.

The deputation which had come from the clergy consisted of six members.[72] The Bishop of Montpellier was at their head, and reported to the third estate the result of the deliberations of the clergy. He announced that after considering the request of the third estate that the orders unite for the verification of credentials, the clergy had decided to name commissioners whose duty it should be to confer with other commissioners appointed by the third estate and by the nobles on the manner in which the credentials ought to be verified. The clergy, therefore, requested the third estate to name commissioners to take part in these conferences.[73] This, then, was the reply of the clergy to the

[72] Biauzat, II, 41; *Récit des séances des députés des communes,* 9; Vallet, *Récit,* 8; Coster, 7 mai; *Lettres du Comte de Mirabeau,* No. 1, 19; *Procès-verbal historique,* 44. Vallet and the *Procès-verbal historique* name the following persons as having made up the deputation: Bishop of Montpellier; Bishop of Orange; l'abbé de Grieu, prieur de Saint-Himère de Rouen; M. David, curé de Lormaison. deputé de Beauvais; Dom Davoust, prieur de Saint-Orien de Rouen; D. Dillon, curé du Vieux-Pouzauges. There is evidence that the *Procès-verbal historique* used the account of Vallet and therefore the agreement of these two in regard to the names is not sufficient to prove that the list is correct. Thibault (181) simply gives the names of the Archibshop of Montpellier and Archbishop of Nimes. The last is not given either by Vallet or in the *Procès-verbal historique.*

[73] Biauzat, II, 41; *Récit des séances des députés des communes,* 9; *Lettres du Comte de Mirabeau,* No. 1, 18; Thibault, 181; Coster, 7 mai; Vallet. *Récit,* 8; *Procès-verbal historique,* 8.

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request of the commons that they unite in the national hall for the purpose of verifying credentials. The clergy had not accepted the invitation, neither had they flatly refused it; instead, they had adopted a middle course, attempting to place themselves between the radical demands of the third estate and the reactionary policy of the nobles. They hoped to be able to bring the opposing parties to some kind of a peaceful agreement. The guard of the seals, in his address on May 5, had expressed the hope that in case of threatening trouble, the clergy would adopt the rôle of peacemakers. It is impossible to say whether this had any effect on the clergy or not, but their present attitude was in keeping with these suggestions. The conciliatory attitude of the clergy was, doubtless, largely due to the fact that the membership of their order was divided between the higher clergy, who favored the policy of the nobles, and the lower clergy, who were in sympathy with the third estate. Since they were thus divided into two opposing factions, it was natural that they should attempt to find some means of peaceful settlement which would prevent an open struggle in their ranks.

The third estate apparently did not receive this proposition of the clergy with any enthusiasm. Contemporary accounts have little to say about what happened at this time. The *Récit,* however, states that after the deputation from the clergy had left the hall, the proposal of the clergy was discussed by the commons and it was remarked that the verification of credentials in common was an absolute necessity, and therefore not a subject to be submitted to a commission.[74] The third estate had made the first attempt to bring about the union of the orders and as a result of its advances it was confronted with the proposition to submit to a sort of board of arbitration the question which was causing the trouble and which, in their opinion, could have but one solution. The clergy evidently hoped to bring about a compromise, but the commons saw no possibility of any such settlement of the question.

What had been taking place, meantime, in the chamber of the

[74] *Récit des séances des députés des communes,* 9.

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clergy? On the morning of May 7, according to Thibault, the clergy proceeded with the promised verification of credentials. According to the same writer, M. Dillon and M. Thibault agreed to act as provisional secretaries, and were calling the roll by *bailliages, sénéchaussées* and *gouvernements,* when they were interrupted by the arrival of the deputation from the third estate, which has been previously discussed.[75]

The clergy received this deputation with marked courtesy.[76] Thibault says that a deputation of six members of the clergy was sent to receive them and to escort them to seats near the president.[77] Vallet says that upon entering the hall, the deputation was greeted with applause. Mounier acted as spokesman for the deputation.[78] According to Thibault, he first expressed the kindly feelings of the third estate for the clergy and then requested the clergy to unite with the third estate for the verification of credentials in common.[79] Jallet, in his account of this speech, calls attention to the fact that Mounier, in addressing the clergy, used the term "Messieurs" exclusively, not once using the title "Messeigneurs," although there were many bishops and archbishops present. The writer adds that no one paid any attention to this violation of conventionalities.[80]

After the departure of the deputation, the clergy took up the discussion of the request which had been made by these members of the third estate. It was apparently during this discussion that the two curés withdrew to go to the commons and request them not to separate until the clergy had finished its deliberations on the request of the third estate.[81] We have no record of the debate that took place at this time, but judging from the fact that there were two opposing factions in the order, it is safe to assume that the discussions were not lacking in interest. When

[75] Thibault, 181.

[76] Thibault, 181; Vallet, *Récit,* 8.

[77] Thibault, 181.

[78] *Ibid.;* Jallet, 52.

[79] Thibault, 181; Jallet, 52.

[80] Jallet, 52.

[81] Vallet, *Souvenirs* in *Nouvelle revue rétrospective,* 10 Avril, 1902, 234; Biauzat, II, 41.

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it was proposed that the clergy should reply to the third estate by requesting that commissioners be appointed by the three orders to consider the best means of verifying the credentials, the proposition was supported, Jallet tells us, by the archbishops of Vienne and of Bordeaux and by the bishop of Langres.[82] The plan was finally adopted, as we have already seen. The *Procès-verbal historique* states that this proposition was accepted in order to postpone definite action in the assembly of the clergy in regard to the question of uniting with the third estate.[83] The clergy had not reached the point where it was ready to fight the question out in its own order and doubtless hoped by means of the conciliatory commission to find a solution for the difficulty which would prevent serious trouble in its ranks.

After this decision had been reached, the clergy drew up a formal response to the third estate. If we may believe Jallet's statement, the utmost care was taken in framing this reply. He says that it took almost two hours to prepare three lines and that nicety was carried to the point of not using the expression "order of the clergy," but substituting instead, "members of the clergy."[84]

The six deputies who had been appointed to carry this response to the third estate, then visited that order, as has been previously mentioned, and upon their return to the clergy made a report of their visit. In this report the statement was made that the third estate was "favorably disposed" towards the proposition made by the clergy.[85] Just what grounds the deputation had for thinking that the commons were favorably disposed towards this plan is not quite clear. The *Récit* states very plainly that the remarks made in the third estate were in opposition to the scheme,[86] while Biauzat says that during the time the deputies from the clergy were in the hall of the commons, they were surrounded by a number of deputies of the third estate who evidently discussed

[82] Jallet, 52.
[83] *Procès-verbal historique,* 43.
[84] Jallet, 52.
[85] Thibault, 182; Vallet, *Récit,* 8.
[86] *Récit des séances des députés des communes,* 9.

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the situation with them, and while their remarks could not be heard, it seemed clear that the members of the clergy were not pleased with what the deputies of the commons had to say.[87] Coster says that the deputation from the clergy had scarcely left the hall of the third estate, when several deputies of the commons ran after them and proposed that the appointment of the commissioners should take place in the general assembly.[88] If this statement is true, it is but another evidence of the determination of the commons to bring about a union of the orders.

It was during this session of the clergy on May 7, probably while they were working on the verification of credentials, that the Archbishop of Vienne expressed very positively his position and the position of his colleagues from Dauphiné in regard to the manner of verifying credentials.[89] He stated, according to Thibault, that the deputies from Dauphiné had insisted and still insisted on the verification of credentials in common with the other two orders and that although they submitted their credentials to the order of the clergy, out of respect for that body, they did it with the understanding that this action should not be looked upon as in any way opposing the verification in common which they considered indispensable.[90] These remarks seem to have started a discussion which, according to the account given in the *Procès-verbal historique,* became so heated that the Cardinal de Rochefoucauld, the presiding officer, in order to give the deputies a chance to cool off, announced that there would be no session of the clergy until May 11. The cardinal gave as his reason for this action, the necessity of consulting with the nobility as to what should be done. The *Procès-verbal historique* goes on to say that since this declaration was not authorized by the order and since it would mean three days of inaction, it caused

[87] Biauzat, 42.

[88] Coster, 7 mai.

[89] Thibault, 182; Vallet, *Récit,* 8. Thibault gives this speech as coming after the report of the deputation to the clergy. He also gives the text of the speech. Vallet merely mentions the fact that the Archbishop of Vienne spoke in favor of the third estate. He places the speech before the appointment of the commission.

[90] Thibault, 181.

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a feeling of indignation which was quite general. Finally, according to this same account, after one of the prelates had suggested that another presiding officer be chosen, the cardinal retracted and announced a session for May 8.[91] When the clergy met the next day, there were about forty members absent, according to Coster, owing to the announcement which the cardinal had made that the next session would be on May 11, and which a large number of the deputies had not heard revoked. Coster says that the question arose as to whether the assembly was complete with so many members absent. It was decided that it was complete in spite of the large number of absent members.[92]

The question came up in the session of May 8 as to when the clergy should name its commissioners for the conferences on the verification of credentials.[93] A motion was made, probably by the Archbishop of Vienne,[94] that the commissioners be named at once.[95] The higher clergy, however, attempted to delay the appointment, wishing, as they said, to wait for the action of the nobility.[96] Jallet says that some of these members expressed the opinion that it was not necessary to conciliate the third estate at the expense of alienating the nobility, and that it would be best to first know whether or not the nobles would consent to name commissioners.[97] But Jallet says that the archbishops of Vienne and of Bordeaux were able to refute these arguments, and it was decided by a vote of 134 to 76 to elect the commissioners at once.[98] The lateness of the hour evidently prevented the voting from being completed that day and it was postponed to the next

[91] *Procès-verbal historique*, 18.

[92] Coster, 8 mai.

[93] Thibault, 181; Coster, 8 mai; Jallet, 52.

[94] Coster, 8 mai; Thibault, 181. Coster attributes this motion to the Archbishop of Vienne.

[95] *Ibid.*

[96] Coster, 8 mai; Jallet, 53.

[97] Jallet, 53.

[98] Jallet, 53; Coster, 8 mai; Thibault, 183. Jallet gives the vote 134 to 76; Coster 127 to 76; while Thibault simply says the majority was in favor of naming them at once.

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session.[99] It was begun, however, and was finished the following Monday.[100]

The hostile attitude of the higher and the lower clergy towards each other is illustrated by an incident related by Coster. He states that during the session of May 8, a curé happened to interrupt the cardinal, and upon being reproved by a bishop who was near, the curé said that he thought the cardinal had finished, and begged pardon for the offense. The bishop, however, refused to let the matter drop, and at length the curé, completely out of patience, retorted that he would not take reproof from a bishop and that he, the curé, knew quite as well as the bishop what was fitting. Farther on in his account, Coster says that this hostile feeling between the two factions of the clergy was shown still more clearly when one of the bishops having called the curés "sons of peasants," several curés tried to draw up a list of the bishops, with notes regarding their birth, the intention of the curés evidently being to annoy the bishops by showing that they had no reason to boast in regard to their ancestry.[101] Thomas Jefferson also calls attention to the hostility that existed between the two factions of the clergy. In speaking of the states general in a letter dated May 9, 1789, he says: "It was imagined that the ecclesiastical elections would have been generally in favor of the higher clergy; on the contrary, the lower clergy have obtained five-sixths of these deputations. These are the sons of peasants who have done all the drudgery of service for ten, twenty and thirty guineas a year, and whose oppressions and penury contrasted with the pride and luxury of the higher clergy, have rendered them perfectly disposed to humble the

[99] Jallet, 53; Thibault, 183.

[100] *Ibid.;* Vallet, *Récit,* 11; *Procès-verbal historique,* 45. Thibault explains in detail the method of voting. He says that each member prepared a ballot containing the names of the deputies he wished to vote for and deposited it in a receptacle, after which they were counted by the secretaries, Dillon and Thibault. The ballots which were still uncounted on Saturday when the session ended were placed in a vessel (those which had been counted having been publicly burned) and were locked up in a place for safe keeping, the president taking charge of the key.

[101] Coster, 8 mai.

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latter."[102] Thus it will be seen that it was in an order where there was a deep-seated hatred between the two opposing parties, that an attempt was being made to save the states general from being involved in an open struggle, that attempts to reconcile the nobility and the third estate were being made by a body of deputies who were themselves disunited.

In the sessions which had taken place in the meantime, in the hall of the third estate since May 7, there had been no action in regard to the proposition to name conciliatory commissioners. The commons were waiting, evidently, to see what the nobility intended to do. If the nobles refused to accept the proposition, that would relieve the third estate of the necessity of either accepting or rejecting it. If, on the other hand, the nobility accepted the proposition, there would then be time enough for the third estate to act.[103] The nobles, however, were having a recess from May 6 to May 11.

The third estate, meanwhile, held to its policy of inaction, although the discussion of matters of organization was taken up. A list of the deputies from each bailliage was prepared, probably for the purpose of facilitating the taking of votes.[104] A plan was also proposed for conducting the business of the assembly.[105] This *règlement,* as it was called, was presented by the dean, and was supported, the *Journal des états-généraux* says, by those who favored the privileged orders,[106] their idea evidently being that by adopting this *règlement* the third estate would virtually

[102] Jefferson, II, 460.

[103] Boullé, in *Revue de la révolution, Documents inédits,* 171. Boullé hints that the third estate was waiting for the action of the nobles. Speaking of the session of May 8, he says: "Les curés nous assurent toujours qu'ils ne tendent qu'à le réunion et que, dès la noblesse sera assemblée lundi, ils s'occuperont de tous les moyens et les démarches propres à y parvenir; ainsi, il faut attendre ce jour qui pourrait voir entamer les grandes questions; mais nous ne nous flattons pas qu'elles puissent se résoudre sans obstacles et sans peine."

[104] *Récit des séances des députés des communes,* 7; Biauzat, II, 42.

[105] *Récit des séances des députés des communes,* 7; *Lettres du Comte de Mirabeau,* No. 2, 2; *Journal des états-généraux,* I, 14.

[106] *Journal des états-généraux,* I, 14.

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organize itself into a separate chamber, the very thing the nobles were hoping they would do.

The scheme for a *règlement* was vigorously combated by certain members of the commons.[107] It was argued that since they were an unorganized body of deputies and had decided upon a plan of inaction, they could not adopt rules of order without contradicting themselves. Biauzat called attention to the fact that if the plan drawn up by the dean should be adopted, it would make the process of voting extremely slow. He stated that the plan for voting proposed by the *règlement* was to have the roll called twice on each question; once, apparently to give the deputies an opportunity to discuss the subject, and a second time for taking the vote.[108] The third estate evidently used this method in voting on the adoption of the *règlement*.[109] Biauzat said at the rate they were going, it would take four or five days to decide upon the most trifling matter.[110]

The vote on the adoption of *règlement* was not finished on May 8 and was taken up again on May 9.[111] According to Biauzat, the dean made a speech in this session, in which he defended his plan.[112] Other speeches were delivered which, Biauzat states, were much more carefully prepared than had been the case in the former session, some of them even being written. Although the assembly possessed no permanent organization, the chaos was gradually giving place to order. It was in this session of May 9 that Mirabeau attempted to speak, evidently out of his turn, but

[107] *Ibid.;* Biauzat, II, 42.

[108] Biauzat, II, 42.

[109] *Ibid.;* Duquesnoy, I, 11; *Récit des séances des députés des communes,* 9. Biauzat (II, 42) gives an account of the discussion on the adoption of the *règlement.* In his account of May 9 (pp. 44–45) he tells of the continuation of this discussion and of its completion and then remarks that it only remained for the final count to be taken on Monday, without any further discussion.

[110] Biauzat, II, 42.

[111] *Ibid.,* 43; *Récit des séances des députés des communes,* 10; Duquesnoy, I, 13; *Lettres du Comte de Mirabeau,* No. 2, 4.

[112] Biauzat, II, 43. Biauzat declares that this speech was the work of a counsellor in whom the dean had too much confidence.

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the clamor raised against him was so great that he was forced to keep silent.[113] Biauzat says that the members insisted that the discussion should be carried on in regular order.

Mirabeau, in his *Lettres,* gives an account of a speech made during the discussion, by a deputy from Colmar, which had a number of significant passages in it. The speaker did not approve of the plan for the *règlement,* but suggested that it would be wise to adopt some system of voting. During his remarks he gave a definition of the third estate. He designated it as "some persons presumably legally elected by the third estate of the realm as deputies to the states general."[114] He suggested that it might be necessary for these deputies to declare themselves the "nation" and "commence the restoration of the monarchy, regardless of the other orders."[115] In case they should find it necessary to take this important step, some sort of a provisional organization would be necessary.

The result of the discussion on the plan for a *règlement* was that it was abandoned, the third estate adhering strictly to its policy of inaction.[116]

The commons had now been waiting passively for three days, while the nobles were not in session, leaving it to the latter order to make the next move. The kind of concessions that might be expected from the nobles was shown by an incident related by Duquesnoy. He says that during a conversation between a member of the commons and one of the nobles, the noble remarked

[113] Biauzat, II, 43; Duquesnoy, I, 13.

[114] *Lettres du Comte de Mirabeau,* No. 2, 5.

[115] *Ibid.,* 8.

[116] Duquesnoy, I, 13; Biauzat, II, 45, 47; *Récit des séances des députés des communes,* 10. It is not clear when the final decision was reached. The *Récit* says: "Sans admettre ni rejeter précisement le règlement présenté par M. le Doyen, on lui laissait la police provisoire de l'assemblée jusqu'à ce qu'elle fût constitueé." Duquesnoy writes: "Il parait que le règlement projeté n'a pas la majorité des voix." Biauzat, in writing of the session of May 11, has this to say concerning the *règlement:* "Au lieu de procéder à recueillir les voix sur le règlement proposé vendredi 8, on s'est occupé de différents motions." It is probable, therefore, that the matter was simply dropped before the final vote was taken.

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that his order would never consent to vote by head, that they would return to their estates first. "Then what will you do?" he asked of the deputy of the commons. "We will declare ourselves the nation," was the reply. The noble tapped his sword, saying, "And we have weapons." "Very well," was the reply, "we will fight." Such a mood as this was not likely to result in any very important concessions unless they were forced upon the nobility.[117]

The attitude of the third estate towards the division into orders, is illustrated by the events connected with the funeral of a deputy of the commons. It was announced in the third estate during the session of May 8, that one of their deputies, M. Heliand, had died, and an invitation was extended to the third estate by certain members of the clergy, according to Biauzat, to send a deputation to the funeral.[118] The announcement was also made that the service for the deceased deputy would be held in the chamber of the clergy. Biauzat says that it was decided by shouts, without taking a vote, that this was no occasion for a deputation; that it was fitting for those who could, to go to the funeral, but that it was not necessary to go to the hall "which the clergy calls its chamber."[119] In Vallet's account of the burial of this deputy, he states that representatives of the three orders carried the pall, indicating that while the third estate did not send a deputation, the distinction between the orders was maintained.[120] Vallet and the *Journal des états-généraux* agree that the deputies marched behind the pall, separated according to their respective orders.[121] Later, in the record of the session of May 11, while giving an account of the mass held by the clergy for the deceased deputy, Thibault makes the statement that the mass was attended by representatives of all the orders.[122] There is no

[117] Duquesnoy, I, 14.

[118] *Récit des séances des députés des communes,* 9; Biauzat, II, 42, 43; *Journal des états-généraux,* I, 15.

[119] Biauzat, II, 43.

[120] Vallet, *Récit,* 1.

[121] Vallet, *Récit,* 1; *Journal des états-généraux,* I, 15.

[122] Thibault, 184.

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mention of this, however, in any of the accounts written by members of the third estate. It is evident that the third estate had no intention of sending a deputation, although respect for their deceased colleague doubtless led some of them to attend the service. The policy of the commons, even in matters of this kind, was to avoid anything which would give the upper orders an opportunity to say that the third estate was a constituted chamber.

On Monday, May 11, the nobility met again after their three days recess,[123] and they now became the center of interest. What would be their attitude towards the plan for a conciliatory commission? Would they accept it, or would they reject it? The future action of the third estate rested on their answer.

Mirabeau says that this first session of the nobility after its recess, lasted seven hours.[124] In giving an account of the day's proceedings, the *Procès-verbal* of the nobility first mentions the announcement made by the dean, of the intention of the clergy to hold mass for the deceased member of the third estate. After this, according to this same account, the committee on the verification of credentials reported in regard to the work that had been done by it.[125] The roll was called, and then the commissioners informed the nobles that they had receievd a deputation which had come from the third estate on May 7, for the purpose of informing the nobility that the third estate was waiting for the nobility and the clergy in order to proceed with the verification of credentials. The committee on verification also reported that they had taken the liberty to name four of their number to be present at the burial of the deputy of the third estate, "thinking this in keeping with the spirit of fraternity which should rule between the different orders." It is said that the nobles applauded this act of thoughtfulness on the part of the committee.[126]

[123] *Procès-verbal de la noblesse, 27*; *Lettres du Comte de Mirabeau*, No. 2, 12. The recess had lasted four days, including Sunday.

[124] *Lettres du Comte de Mirabeau*, No. 2, 12.

[125] *Procès-verbal de la noblesse, 27*; manuscript of the same. The printed copy gives the number of those with satisfactory credentials as 237, while the manuscript has the number 235.

[126] *Procès-verbal de la noblesse, 28.*

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Soon after the committee on verification had made its report, the deputation from the clergy came to inform the nobles of their plan to have commissioners appointed by the three orders to consider means of verifying credentials.[127] Eight of the nobles had been sent by the president to receive this deputation, according to the *Procès-verbal* of the nobility.[128] This same account states that after the deputies from the clergy had been seated at the right of the president, the Bishop of Saintes informed the nobility of the decision the clergy had made to appoint conciliatory commissioners. The president of the nobility asked for a copy of the decree which the clergy had passed. The bishop replied that the clergy was not organized, that it had neither a president nor a secretary, and that it was keeping no record of its proceedings. He promised, however, to make known the request to his order.[129] The deputation then withdrew, being conducted out of the hall, evidently, with the same ceremony that had been shown when it entered.[130]

The *Procès-verbal* of the nobility says that during the interval between the time the deputation of the clergy left the hall, and the time when it returned with an answer to the request for a copy of the decree of May 7, the nobles were discussing whether they should proceed with the verification of credentials or take up the request of the clergy to name conciliatory commissioners.[131] The discussion was interrupted by the return of the deputation from the clergy, bringing a copy of the decree passed on May 7. This decree, however, was merely a statement of the action of the clergy, and was unsigned, consistent with the attitude of the clergy in considering its organization not of a permanent nature.[132] The decree is given thus in the *Procès-verbal* of the nobility: "On the proposition which was made by the third

[127] *Procès-verbal de la noblesse,* 28; Vallet, *Souvenirs,* 235; Jallet, 54; Thibault, 185.

[128] *Procès-verbal de la noblesse,* 28, 29.

[129] *Ibid.,* 29.

[130] *Ibid.*

[131] *Procès-verbal de la noblesse,* 29.

[132] *Ibid.;* Thibault, 185; Coster, 11 mai; Vallet, *Récit,* 15; Jallet, 54.

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estate to unite in common for the verification of credentials, the members of the clergy have charged their deputies to express to the gentlemen of the third estate the zeal and attachment which they have for them and their desire to aid in bringing about the most perfect harmony among the orders, that in consequence they have agreed to name commissioners and to invite the other orders to do likewise, in order to confer and to act together in regard to the proposition of the third estate."[133]

After the deputation had informed the nobles of the action of the clergy, and had departed, it seems that the nobility, instead of at once taking up the proposition that had just been made to them, took up the question as to whether their chamber was legally constituted by those members whose credentials had been verified.[134] When the matter was put to a vote, it was decided that the members whose credentials had been verified made up a chamber which was "legally and sufficiently constituted,"[135] a decision which meant that the verification of credentials in common was entirely unnecessary.

The *Procès-verbal* of the nobility says that they then turned their attention to the request that the clergy had just made. It was decided to appoint a committee to go to the other two orders and present the compliments of the nobility,[136] but the vote was not taken as to what should be done regarding the conciliatory commission, presumably because there was not time enough.[137] The committee which the nobility had just appointed visited the

[133] *Procès-verbal de la noblesse,* 29; Thibault, 181.

[134] *Procès-verbal de la noblesse,* 31. This account says that after the departure of the commission, the order took up the debates which had been interrupted by the return of the deputation from the clergy. The question arose, the *Procès-verbal* states, as to whether the members whose credentials had not been verified should have the right to take part in the deliberations. The statement is made in this same record, that no decision was reached regarding the matter, but instead it was proposed to decide whether or not the chamber was legally constituted.

[135] *Procès-verbal de la noblesse,* 31; *Lettres du Comte de Mirabeau,* No. 2, 12.

[136] *Procès-verbal de la noblesse,* 31.

[137] *Ibid.*

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clergy that same day, May 11,[138] although they seem not to have given an account of it to their order until May 12.[139] The clergy received them with due ceremony, and the delegation informed the ecclesiastical deputies of the wish of their order to maintain union, expressing their regret that the nobles could not yet give an answer to the request of the clergy.[140] The *Procès-verbal* of the nobility says that when this deputation made its report to the nobles, it stated that it had found the third estate adjourned.[141]

On the next day, the question came up as to whether the nobles should accept the proposition of the clergy and name commissioners to consider the manner of verifying credentials. The nobles had organized, had verified their credentials, and had decided that their order was legally constituted by those whose credentials had been verified. They had received the formal request of the clergy to name conciliatory commissioners and were now about to decide whether they should accept the proposition. But before voting on this question, it is related by the *Procès-verbal* that they first voted to inform the other orders of the decisions they had made on May 6 and 7, that is, the decisions they had reached to verify their credentials regardless of the other orders, and also that after such verification they were legally constituted.[142] It was evident that in deciding to notify the other orders of their decrees, the nobility intended to make it clear that they had no intention of retracting. It would seem useless to talk of conciliation under such conditions, but the chamber proceeded to vote on the question and decided to accept the invitation of the clergy to appoint commissioners.

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[138] Coster, 11 mai; Thibault, 186; Vallet, *Récit*, 14. Thibault and Coster name the following persons as making up this deputation: the Duc de Luxembourg, the Comte de la Châtre, the Marquis de Crussol, the Comte d'Escars, the Comte de Lévis, the Baron de Montboissier, M. de Bressy, and the Vicomte de Mirabeau.

[139] *Procès-verbal de la noblesse*, 33.

[140] *Ibid.*, 33, 34; Thibault, 186; Coster, 11 mai.

[141] *Procès-verbal de la noblesse*, 34.

[142] *Procès-verbal de la noblesse*, 34; *Lettres du Comte de Mirabeau*, No. 3, 24. The *Procès-verbal* states that this action was taken before the vote on the conciliatory commission.

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On the following day, the decrees of May 6 and 11, as well as the one of May 12, by which the nobles had agreed to appoint the commissioners, were taken to the other two orders.[143] If we had no contemporary accounts of the effect of this action on the third estate, it would not be difficult to imagine how they must have felt. They had been inactive during the week that had elapsed since the estates met, attempting to convince the other orders of the necessity of the common verification of credentials. The clergy had adopted the rôle of peacemaker and was seeking to find some means of reconciling the orders. The third estate, still taking no action, waited to see what the nobles proposed to do. Would they accept the plan of the clergy and show their willingness to make some concessions? The answer came with the decrees. The nobles accepted the plan of the clergy, but at the same time they showed plainly that they had no thought of yielding to the demand of the third estate, for by communicating their decisions regarding the verification of credentials and the legal status of their order, the nobles virtually said that they had no intention of consenting to a common verification of credentials. If they considered their credentials sufficiently verified by their own order and their chamber legally constituted by deputies whose credentials had been thus verified, then verification in common was useless. The deputies of the third estate were not slow in putting their interpretation on the action of the nobles; the accounts of contemporary writers show clearly the indignation of the commons.[144] The *Récit* states that after the Duc de Praslin had read the decrees and the deputation had departed, a deputy of the commons called attention to the fact that the duke had begun his speech by saying that the third estate would find in the decrees proofs of the desire of the nobles to bring about the "fraternal union" of the orders which was "a precious source of happiness for the nation," and yet the acts of the

[143] *Procès-verbal de la noblesse,* 34; *Récit des séances des députés des communes,* 16; *Journal des états-généraux,* I, 20; Duquesnoy, I, 17; Boullé, *Revue de la révolution,* XI, *Documents inédits,* 11, 12; Biauzat, II, 56.

[144] Duquesnoy, I, 17, 18; *Lettres du Comte de Mirabeau,* No. 3, 4, 5; *Récit des séances des députés des communes,* 17.

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nobles, set forth in their decrees of May 6 and 11, made the decision of May 12, by which they agreed to name conciliatory commissioners, simply matter for ridicule.[145] Mirabeau, in his *Lettres,* treated the situation with that keen sarcasm which he knew how to use so effectively. "The nobles," he asked, "are they not everything in France? What is a corporation of twenty-four millions of individuals? Does it deserve to count for anything? I do not know what our political writers are thinking of when they tell us that this is the nation, as if the nobles were not the nation *par excellence.* If they wish to admit as a third party the twenty-four millions of individuals not noble, it is, on their part, a generous sacrifice, purely voluntary and which no person has the right to demand."[146]

Duquesnoy, writing on May 11, announced that the nobility had declared itself constituted, and added, "It is evident that the moment of the crisis approaches."[147] In speaking of the nobles in the assembly of the third estate on May 13, he mentioned the haughtiness of the Duc de Praslin as he read the decrees, and added that those who had, up to that time, been the most moderate, were very much displeased with the resolutions of the nobles.[148] Duquesnoy suggested that it would have been more natural to appoint commissioners before voting that the credentials were legally verified. He pointed out how the hopes of the third estate had been destroyed since the opening of the states general, and he remarked that a "hundred nobles have been heard to say that they would shed the last drop of their blood rather than yield" in regard to the verification of credentials. "The cool and moderate spirits," he wrote, "thought it would be possible for the third estate to adopt a conciliatory attitude . . . but the nobility threw the gauntlet into the arena and it is necessary to pick it up." He predicted "that if the estates remained in session until the end of the month, the third estate would by that time have declared itself the nation." He added

[145] *Récit des séances des députés des communes,* 17.
[146] *Lettres du Comte de Mirabeau,* No. 3, 3.
[147] Duquesnoy, I, 14.
[148] Duquesnoy, I, 17, 18.

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that the suggestion had been made to the king that, as a means of settling the disturbance, the states general should be suspended.[149] It is evident from the remarks of these writers that the action of the nobles had not served to modify the revolutionary spirit of their opponents, the third estate.

The nobles were not quite through, however. As if they had not already rendered the work of the conciliatory commission practically useless by their determination to persist in their first decision regarding the verification of credentials, they now decided to limit the power of their commissioners, at least so their *Procès-verbal* states, by taking from them the power to make any final decision, rendering it necessary that all matters discussed in the conferences should be reported back to the chamber of the nobles for final decision.[150] This action probably did not make the commissioners any more helpless than they already were, considering the attitude of their order towards the fundamental question to be discussed, but it indicated the fear of the nobles that some radical action might result from the conferences.

The nobles, meanwhile, had continued the verification of credentials in the sessions of May 11, 12 and 13. Some questions arose in connection with this work which are worth noticing, because of their bearing on the policy of the nobles in regard to the manner of verification. Certain persons from the clergy and the nobility of Dauphiné, came into the hall of the nobles on May 11, and protested against the election of the deputies from Dauphiné.[151] The nobles allowed them to read their protest and informed them that the matter would be considered later, the intention evidently being to settle the matter without reference to the other two orders.

Later, according to the account in the *Procès-verbal* of the nobility, a report was made of trouble that had arisen in regard to the deputation from Auxerre. The third estate of that bailliage had elected four deputies and the two upper orders two

[149] *Ibid.*, 18.

[150] *Procès-verbal de la noblesse*, 43.

[151] *Procès-verbal de la noblesse*, 28; *Lettres du Comte de Mirabeau*, No. 2, 12, 13.

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each. The committee on verification, however, believed that the nobles were entitled to but one deputy. The decision of the order was that since the matter concerned the three orders, the decision should be left to the conciliatory commission.[152]

The *Procès-verbal* of the nobility also tells of a protest which was presented on May 12, in which M. Freteau, deputy from Melun and Moret, declared that he could not vote on the proposition to communicate the decrees of May 6 and 11 to the other orders. He also protested against the decision of May 11, in which the nobles declared their order legally constituted. The deputy insisted that so important a question should not have been decided in the absence of so many deputies as were then unable to be present, owing to the delay in the election of the deputies from certain places, notably those of Paris.[153] Such a protest indicates that not all the nobles were in sympathy with the actions of their order.

Turning to the work of the third estate in the sessions of May 11, 12 and 13, we find that they had made some progress in establishing order, but had still been careful to take no action that might be interpreted by the other orders as making the third estate a regularly organized chamber.

The *Récit* says that on May 11, the dean called attention to the fact that in the preceding sessions, a number of the deputies had not worn the costume prescribed by the government for the deputies of the third estate. He stated that there might be some disadvantages in neglecting to conform to the directions of the government. The decision of the assembly, however, was that here, as in other things, everyone should do as he pleased.[154]

On the same day a motion was made, presumably by Malouet,[155] that the commons, since they could not legally organize, should form themselves into a "committee of the whole" (*grand comité*) in order to make it possible to take any action which might be necessary to bring about a reconciliation between the

[152] *Procès-verbal de la noblesse*, 41.

[153] *Procès-verbal de la noblesse*, 35.

[154] *Récit des séances des députés des communes*, 10.

[155] Biauzat, II, 48.

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orders.[156] It was argued that by doing this, they need have no fear of being considered as separately organized, and that, on the other hand, since it would be necessary for them to deliberate, this was a legitimate way of doing so without compromising themselves.[157] The decision, however, was against the proposition.[158]

The *Récit* says that it was during this same session that one of the deputies complained of the arrangement of the seats in the hall and proposed that the grand master of ceremonies be asked to have them arranged in the form of an amphitheater. The proposition was opposed on the ground that the hall did not belong to any particular order, but to the states general and therefore only the states general could order the seats to be changed. This view was evidently that of the majority of the deputies, and the matter was dropped.[159]

It was also on May 11, that certain members from Dauphiné brought in a protest concerning the constitution and election of deputies from their province, and asked the commons to decide the matter.[160] The reply of the commons was that since they were not an organized body, they could not pass judgment on the matter.[161]

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[156] *Ibid.; Récit des séances des députés des communes,* 11; *Lettres du Comte de Mirabeau,* No. 2, 2.

[157] *Récit des séances des députés des communes,* 10, 11.

[158] *Ibid.,* 10. We have only this one account which states that the motion failed to pass. Since there is no record of its being put into effect, it is safe to assume that the *Récit* is correct in its statement.

[159] *Ibid.,* 11, 12.

[160] *Ibid.,* 12; Biauzat, II, 49, 50; *Lettres du Comte de Mirabeau,* No. 2, 9, 10. The *Récit* and Biauzat agree that the Archbishop of Embrun was the spokesman of the deputation. Biauzat mentions the Bishop of Digne and the Marquis of Autichamp as being members of the deputation. The *Récit* says that there were fifteen members of the deputation besides the Archbishop of Embrun; Biauzat states that the deputation consisted of fifteen or sixteen members; Mirabeau says that there were twelve or fifteen persons in it.

[161] *Récit des séances des députés des communes,* 12; Biauzat, II, 50; *Lettres du Comte de Mirabeau,* No. 2, 10. The account of the reply as given by the *Récit* is as follows: "M. le doyen a répondu que les com-

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Arrangements had been made for mass to be said for Louis XV, and on May 12, according to the *Récit,* the dean announced that the clergy and nobility had each appointed twelve representatives to attend the service, and asked what the commons should do concerning the matter.[162] The third estate decided that to be consistent with its present policy it could not send a deputation, but it was agreed, however, that as many of the deputies of the commons as possible should attend the mass and thus avoid the appearance of a deputation.[163]

When the nobles on May 13 brought copies of their decrees of May 6, 11 and 12 to the third estate, the dean informed them, according to the *Récit,* that the commons were not organized and that they would consider the means of conciliation when they had

munes n'étaient point constituées; qu'elles formaient seulement une assemblée de citoyens réunis par une autorité légitime, pour attendre d'autres citoyens; qu'elles ne pouvaient par consequent porter aucun jugement." Biauzat says: "M. le doyen balbutiait une réponse. . . . M. de Mirabeau a supplée à l'instant en disant à ces messieurs: 'L'assemblée des états-généraux n'etant pas complète, nous n'avons pas le pouvoir de vous répondre,'" etc. Mirabeau tells of the reply as follows: "Les communes ont declaré qu'elles n'étaient encore rien, qu'elles ne formaient point une ordre, qu'elles formaient une simple assemblée de citoyens réunis par une autorité légitime, pour attendre d'autres citoyens; qu'elles ne pouvaient par conséquent examiner ce différend."

[162] *Récit des séances des députés des communes,* 13; *Lettres du Comte de Mirabeau,* No. 3, 1; *Procès-verbal de la noblesse,* 33; Biauzat, II, 51. 52. Biauzat states that the priests and curés of St. Louis had informed the clergy and the nobility of this service, but not the third estate. A complaint was made to De Brézé, in which the commons expressed their desire to be present at the service. De Brézé reported the matter to the king, according to Biauzat, and later announced to the third estate that the king was very much touched by the action of the third estate and that places would be reserved for the third estate. Biauzat says that there were twenty-four places for the commons. Thibault, in speaking of this service (188) from the clergy's standpoint, relates that the clergy requested that they be allowed to send a deputation to this service, or else to be present in a body and the king sent back word that there would be places for twenty-four deputies.

[163] *Lettres du Comte de Mirabeau,* No. 3, 1; *Récit des séances des députés des communes,* 13.

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organized.[164] Biauzat tells us that the Duc de Praslin asked for a written reply and the dean was about to give it, when he was stopped by cries of "No! No! Do not give a reply!" They feared, says Biauzat, that the nobles might argue that the written response would show that the commons were organized.[165] That same day, apparently, the clergy brought a copy of their decree of May 7, the decree by which they had decided to name conciliatory commissioners.[166] The *Récit* states that the reply to the clergy was practically the same as that given to the nobles when they brought copies of their decrees, that is, that the third estate was not an organized body and therefore could not take any action, at present, concerning the appointment of commissioners.[167]

It is evident from these various incidents that the third estate held persistently to its policy of inaction. However, they decided, either on May 11 or 12, to attempt to lessen the disorder in the assembly by providing "assistants" whose duty it should be to count votes, receive deputations, take notes on the speeches, and debates, and aid in keeping order. These assistants were to be chosen by the assembly, divided into sections corresponding to the ancient "governments," one assistant to be selected by each section, making twelve in all.[168]

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[164] *Récit des séances des députés des communes,* 17.

[165] Biauzat, II, 56.

[166] *Récit des séances des députés des communes,* 18; Thibault, 193; Biauzat, II, 6; Coster, 14 mai. The *Récit* states that this decree was brought on May 13. Biauzat says that the announcement of the election was brought on that day, while Thibault and Coster both state that the decree of May 7 was carried to the third estate on May 14. Coster also says that the motion was passed to do this on May 14, while Thibault states that this decision had been made on May 13, and was carried out on May 14. It is likely that the vote was taken on May 13, the deputies executing their mission on that day and reporting to their order the next day.

In the account in the *Récit* the statement is made that the deputies from the clergy said they brought this decree at the request of the third estate. A foot-note, which is a part of the original record, states that there was only one member who requested that the decree be brought.

[167] *Récit des séances des députés des communes,* 18.

[168] *Ibid.,* 12, 13, 14; *Journal des états-généraux,* I, 16; Biauzat, II, 52, 53; Duquesnoy, I, 16; Boullé, in *Revue de la révolution,* XI, *Documents*

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It was during these opening days of the states general that the government gave a play at the chateau, evidently for the entertainment of the deputies gathered at Versailles.[169] It was announced in the hall of the third estate, according to the *Récit,* that there were two hundred tickets for this entertainment for the deputies of the third estate. The commons evidently did not respond very enthusiastically to this offer, for the *Récit* tells of some complaints that were made because of this extra expense. Some thought that the deputies ought not to make use of the tickets; others maintained that the tickets should be used out of respect for the king, but that "they should ask later that the king do nothing out of the ordinary for their entertainment, for fear that their constituents who were suffering most might be offended by this increase in expenses."[170]

During the interval, beginning May 11 and ending May 13, the clergy had, on May 11, completed the election of their commissioners for the conferences,[171] and on May 13 the Bishop of Lydda informed the third estate that the election had taken place.[172]

A number of other matters of minor importance came up in the chamber of the clergy during this period. On May 11 the deputies from Dauphiné who were protesting against the elections in their province, came into the hall of the clergy and made their protest.[173] They were answered by the Archbishop of Vienne, who claimed that it was the business of the states general to

inédits, 15. The *Récit* states that this motion was proposed on May 11, discussed, the vote begun on May 12 and completed on May 13. Duquesnoy says that the decision was taken on May 12, no mention being made of any action on May 11.

[169] *Récit des séances des députés des communes,* 14; Duquesnoy, I, 14.

[170] *Récit des séances des députés des communes,* 14.

[171] Thibault, 185; Coster, 11 mai; *Procès-verbal historique,* 48; Vallet, *Récit,* 16; Boullè, in *Revue de la révolution,* XI, *Documents inédits,* 19, 20.

[172] Jallet, 56; Thibault, 190; *Procès-verbal historique,* 57; Vallet, *Récit,* 21. The names of the commissioners were: the Archbishop of Bordeaux, the Archbishop of Vienne, Coster, Dillon, Richard, curé de Clisson, Thibault and Lecesve.

[173] Thibault, 186; Coster, 11 mai; Vallet, *Récit,* 11; Jallet, 54.

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settle this matter.[174] The subject was evidently given no further consideration.[175]

Jallet tells of a work written by the Bishop of Langres, which was distributed among the clergy, in which the writer advocated the formation of a single chamber composed of the clergy and the nobility.[176] Jallet remarked that it was evident that the real object of this plan was to lessen the power of the lower clergy, who, in such a chamber, would be entirely outnumbered by the nobles and the higher clergy, these two last classes being natural allies.

On May 12, some members of the third estate came to the clergy to thank them for their presence at the burial of M. Heliand.[177] Thibault reports the speech in detail, telling how the speaker eulogized the deceased deputy, and expressed the thanks of the third estate for the presence of the clergy at the burial, saying that if anything could reconcile the commons to their loss, it would be the evidence of the good will of the clergy as shown in the manner in which they honored the deceased member of the third estate.

On May 13, a matter of considerable importance was brought up by the Archbishop of Bordeaux. He proposed that the clergy should vote to abandon their pecuniary privileges.[178] Jallet states that the motion was so strongly opposed that it was dropped without even coming to a vote. He mentions the fact that the Archbishop of Vienne supported the proposition, and Coster speaks of the support given by the bishops and the Archbishop of Arles. It is probable that the idea of those supporting this measure, was that such a conciliation might hasten the action of the nobility and of the third estate.[179]

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[174] Thibault, 186; Coster, 11 mai; Jallet, 54.

[175] Thibault (186) drops the subject here. Coster mentions it as coming up again that same day, and states that the assembly supported the opinion of the Archbishop of Vienne.

[176] Jallet, 54, 55.

[177] Jallet, 54, 55; Thibault, 187; Coster, 12 mai; *Procès-verbal historique*, 53.

[178] Vallet, *Récit*, 25; Jallet, 56; Coster, 13 mai.

[179] Vallet, *Récit*, 25. Vallet, in discussing this proposition, mentions that

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Another attempt was made to induce the nobility to take some action regarding the conciliatory commission, according to the account of Abbé Coster. He says that it was proposed to send a deputation to the nobles to warn them that the clergy would wait just an hour longer for an answer to their invitation to name commissioners, and at the end of that time, if no reply had been received, their commissioners would begin this work. Coster says that this proposition received no more support than the one to abandon their pecuniary privileges.[180]

The period, then, from May 11 to 13 had seen the naming of the commissioners by the clergy, the decision of the nobles to accept the proposition to appoint a conciliatory commission, but without having named their commissioners and showing little disposition to make any important concessions; the third estate had remained unwavering in its determination to do nothing that could be interpreted as indicating that it had organized as a separate order. Since the nobles had agreed to name commissioners, it remained for the third estate to either refuse the proposition and thus hasten the crisis, or to accept it and attempt to find a peaceful settlement of the difficulties.

The third estate thus became the center of interest. On May 14, the question was taken up as to whether they should appoint conciliatory commissioners, and the discussion was continued until May 18. It was Rabaut de Saint-Etienne who made the motion on May 14 that the commons appoint sixteen commissioners to confer with the deputies of the other two orders as to means of bringing about a union of the orders, but with the understanding that these commissioners should not consent to the verification of credentials in the separate orders, or renounce the principle of the unity of the states general.[181]

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the third estate still refused to organize and that the nobles had not named the deputies as they had promised. This would indicate that the action was proposed in the hope of hastening the action of these orders.

[180] Coster, 13 mai.

[181] *Récit des séances des députés des communes,* 19; Biauzat, 57; Duquesnoy, I, 19; *Lettres du Comte de Mirabeau,* No. 3, 6; *Journal des états-généraux,* I, 23; *Bulletins d'un agent secret,* in *La révolution française,* XXIII, 366.

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This motion was followed by one by Chapelier, which was an expression of the feeling of the radical members of the assembly.[182] Chapelier first reviewed the attitude of the upper orders since the opening of the states general, showing how the deputies of the commons had waited in vain for these two orders to come to the hall of the estates; how certain deputies from the third estate had gone to the privileged orders and informed them that by their absence from the general hall they were hindering the work which the people of France expected from their deputies; how the deputies of the clergy and of the nobility had paid no attention to this warning, but instead had appointed deputations to the body "which they should have joined, and had offered to confer on those questions which could be discussed and deliberated upon only in the assembly of the states general."

Chapelier worded his invitation and challenge to the privileged orders thus: "The deputies of the commons invite and challenge the deputies of the clergy and of the nobility to unite in the place where for ten days they have been awaited, and to form the states general in order to verify the credentials of all the representatives of the nation. They ask those who have received special instructions to deliberate in common and those who, free to adopt that patriotic opinion, have already done so, to give an example to their colleagues and to come and take the place which is intended for them.

"It has been painful to the deputies of the commons to think that for ten days they have not yet begun the work which will assure the public happiness and the splendor of the state, nor presented to a beneficent king the tribute of homage and gratitude which is due him because of the love he has shown for his subjects and the justice he has rendered them.

"Those who would retard still further the accomplishment of such important duties, are accountable to the nation."[183]

[182] *Récit des séances des députés des communes,* 19; Biauzat, II, 56; *Journal des états-généraux,* I, 23–27; *Lettres du Comte de Mirabeau,* No. 4, 5–7.

[183] *Journal des états-généraux,* I, 23–27; *Lettres du Comte de Mirabeau,*

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It is said by Boullé that this motion was prepared by the deputies from Bretagne and that Chapelier was chosen by them to present it to the assembly. This was probably done in the so-called "Breton club" which was beginning to make its influence felt in the third estate.[184]

The third estate now had before it two conflicting motions; one, that they accept the invitation to name commissioners; the other, that they summon the upper orders to unite with them, rejecting all conciliatory proposals. The debates began at once. The third estate took up the discussion in a more orderly manner than in their previous deliberations. Biauzat, writing on May 15, says: "The sessions of yesterday and today have been without tumult and very agreeable for discussions." Later he writes, "They are beginning to use with perfect exactness the plan suitable to so large an assembly, that is: to call the first time for each to express his opinion, if he wishes to, reserving the collecting of the votes for a second call."[185] Biauzat mentions only two persons as having spoken on May 14, M. Buzot and M. Prefeln, both of whom expressed themselves as being opposed to hasty action and therefore favoring the delay which would result from the acceptance of Rabaut's motion.[186]

Duquesnoy is the only writer besides Biauzat who gives an account of the debate on this first day of the discussion, and he simply mentions some important remarks which he noted, but does not say who made them. He quotes such remarks as these: "The third estate is the nation, the privileged classes are only a fraction of it. My opinion is that we should declare this to them today, or at least tomorrow, and that we should act on that principle!"[187] "A nation can exist without privileged classes:

No. 4, 5–7; Biauzat, II, 61–63; *Récit des séances des députés des communes*, 19.

[184] Boullé, in *Revue de la révolution, Documents inédits*, II, 13. For an account of the work of the deputies of Bretagne in the Breton club, see Kuhlmann's *Influence of the Breton Deputation and the Breton Club in the Revolution.*

[185] Biauzat, II, 67.

[186] *Ibid.*

[187] Duquesnoy, I, 20.

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when Louis XIV drove out the Protestants, the nation did not cease to exist. There were more Protestants than there are now of the privileged [classes]; the nation is able, therefore, to exist without them [the privileged classes], and without doubt they are indeed the ones who are protesting against the rights of nature and of justice."[188]

Another quotation which shows the attitude of the radical party, especially towards the nobility, runs as follows: "Of what use are the conferences? Does anyone believe that the nobility will yield to reason, and is it not plain that they have some other aim besides the abolition of their privileges?"[189] Duquesnoy expressed the opinion that the majority would favor the conferences, but added that he had no doubt but that before the end of the month the third estate would declare that it, and it alone, was the nation. "That fatal declaration made," he wrote, "what will be the outcome? For whom will the king declare himself? If it is for the third estate, the nobility is destroyed; if it is for the nobility, the third estate will submit in Bretagne, in Provence, in Comté, in Dauphiné, etc., only after blood has been shed."[190] Farther on, in his account of the day's proceedings, Duquesnoy tells of one of the Bretons making this statement: "We have remained asleep until today; but it is the sleep of a lion which awakes more terrible to rush on its prey."[191] Duquesnoy closes his account by saying: "I see only one remedy; it is that the king may find in the elections some causes which will allow him to suspend the estates for some time."[192]

It is evident that affairs had reached a critical stage in the third estate and that a rash step might easily result in serious trouble. Much depended on what action should be taken on the questions before the assembly. The two motions were taken up again on May 15. Mirabeau seems to have been the principal

[188] *Ibid.*

[189] *Ibid.*

[190] Duquesnoy, I, 21.

[191] *Ibid.*, 21, 22. Duquesnoy does not say that this remark was made in the assembly.

[192] *Ibid.*, 22.

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speaker of the day.[193] His opinions are explained at length in his *Lettres*. He did not support either motion unreservedly. The chief objection which he raised against the summoning of the privileged orders at once, was that it would call forth still stronger opposition from the nobility than they had already displayed. This, in turn, might necessitate extreme measures on the part of the commons, and they were not yet ready to resort to them.

Taking up the motion of Rabaut de Saint-Etienne, that the commissioners be appointed, Mirabeau argued that such action would place the third estate in the position of "suppliants," when they ought to be adopting the rôle of protectors of the people.[194] He also objected to the motion because it made no distinction between the two upper orders. "That motion, finally," he exclaimed, "treats with the same deference those who, making themselves judges of their own case, have not even condescended to discuss it, and those who, more clever and more tactful, at least cover with gentlemanly manners their irregular and wavering conduct.[195] Mirabeau ridiculed the idea of ever coming to any agreement with the nobles. "Can anyone," said he, "without voluntary blindness flatter himself that conciliation with the members of the nobility is possible when they let it be seen that they will agree [to a conciliation] only after having passed decrees excluding all conciliation, when they have preceded their consent to name commissioners to confer with the other orders, with the proud declaration that they are legally constituted? Is

[193] Duquesnoy, I, 22; *Bulletins d'un agent secret,* in *La révolution française,* XXIII, 266; *Lettres du Comte de Mirabeau,* No. 4, 8–17. Duquesnoy states that Mirabeau made a speech on May 15. The writer of the *Bulletins d'un agent secret* gives this as taking place on May 16, but as this same writer gives the motions of Rabaut and Chapelier as having been made on May 16, he evidently is not to be relied upon for exact dates. Mirabeau himself, in his letters, says nothing of having made this speech, but he explains his views at some length. This letter has been followed in explaining Mirabeau's attitude. It is not possible to tell whether or not he expressed all these opinions in just this manner in the assembly.

[194] *Lettres du Comte de Mirabeau,* No. 4, 10.

[195] *Ibid.*

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that not adding insult to despotism?" Mirabeau closes his tribute to the nobles by saying, "Let them alone, gentlemen; they are going to give you a constitution, rule the state, arrange the finances, and they will solemnly bring you extracts from their registers to serve henceforth as a national code."[196]

Mirabeau then turned his attention to the clergy, and urged that since they had had enough regard for the third estate not to declare themselves legally constituted, and had taken the part of mediator, they alone should be addressed.[197] His hope was that in winning the clergy, the clergy might win the nobility.[198] He pointed out the advantages of negotiating with the clergy alone: first, it would allow the third estate time to decide on what action should be taken in regard to the nobility; second, it would furnish a pretext for the third estate to continue its present policy of inaction; third, it would give the deputies of the clergy who favored the popular cause, the opportunity which they seemed to wish, to unite with the commons; and fourth, it would give support to the friends of the commons in the clergy.[199] Mirabeau suggested that the commissioners be allowed to confer with the nobility as individuals, but not as an authorized deputation.[200]

In answering the argument that the ministry wished the organization of separate chambers, Mirabeau said: "If the ministry is feeble, sustain it against itself, let it partake of your strength, because you have need of its support."[201]

Mirabeau did not believe that the privileged orders were sincere in their promises to renounce their pecuniary privileges. "They flatter us," he said, "that the privileged orders are going to sacrifice their pecuniary exemptions, and what reason then, they say, would there be for voting by head rather than by order? What reason? I could comprehend that language, if it were

[196] *Ibid.*, 11, 12.
[197] *Lettres du Comte de Mirabeau*, No. 4, 12.
[198] *Ibid.*, 12, 13.
[199] *Ibid.*, 13, 14.
[200] *Ibid.*, 15.
[201] *Ibid.*

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addressed to those who call themselves the first two orders, for as they do not have a single privilege outside their pecuniary exemptions, as outside that circle all our interests are evidently common, I do not see a single reason for their opposition to the vote by head, if they are acting in good faith, and that is why I still believe only feebly in the sincerity of their sacrifices."[202]

It was in this same session that Malouet made a motion which apparently aroused considerable feeling in the assembly.[203] In a decree which he proposed to have sent to the other two orders, he began by an introduction in which he mentioned the fact that the nobles had agreed to the appointment of commissioners; he then stated that the work of the commons was to aid in establishing the constitution and that the deputies wished to submit their credentials to the states general in order to hasten this work. The decree proposed the acceptance of the proposition for the conferences and then followed a declaration which aroused the antagonism of Malouet's colleagues. It was worded thus: "We declare, formally, that we intend to respect and have no right to attack the property rights and the honorary prerogatives of the clergy and the nobility.[204] We are equally convinced that their claim to be separate orders will not be any obstacle to the activity of the states general."[205]

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[202] *Lettres du Comte de Mirabeau,* No. 4, 16.

[203] *Ibid.,* 5; Biauzat, II, 58; *Journal des états-généraux,* I, 29; Duquesnoy, I, 23.

[204] *Journal des états-généraux,* I, 29; *Lettres du Comte de Mirabeau,* No. 4, 7; Biauzat, II, 63. Biauzat says that in transcribing this motion, he noted that a change had been made from the wording as Malouet gave it in the assembly. The motion as made by Malouet, Biauzat says, ran thus: "Que nous sommes dans l'intention de respecter et de n'avoir aucun droit d'attaquer *les prétentions légitimes* du clergé et de la noblesse." Biauzat then says: "J'ai lu à la place de cette expression 'Nous déclarons formellement être dans l'intention de respecter et n'avoir aucun droit d'attaquer *les propriétes* et les *prérogatives* honorifiques du clergé et de la noblesse.'"

[205] *Lettres du Comte de Mirabeau,* No. 4, 5–7; *Journal des états-généraux,* I, 27–29; Biauzat, II, 63. Mirabeau and the *Journal des états-généraux* both give the complete text of this motion. They are practically the same. It is possible that both had access to the manuscript text.

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Naturally, such a declaration aroused the commons. The "honorary prerogatives" of the privileged orders and their insistence upon the recognition of separate chambers, were the two things the commons intended to fight to the very end. Mirabeau says: "That motion did not and could not have any success in the assembly of the commons. The disapprobation was general, if we except some partisans of M. Malouet who made vain efforts to sustain the motion and whose first attempt did not receive any encouragement."[206] Biauzat, in speaking of the speeches made by certain deputies, says: "They paid no attention to that indecent motion of Malouet's, except as a lion scatters with his tail those who try to drive him from his prey."[207]

Among those who spoke in favor of the conciliatory commission, MM. Viguier, Thouret, Barnave, Rabaut de Saint-Etienne and Boissy d'Anglas are especially mentioned.[208] Duquesnoy tells of a remark which Rabaut de Saint-Etienne made in his speech on the motions. "Gentlemen," he said, "the nobility has given us the first blow; let us turn the cheek to receive the second blow from the clergy; that is practicing religious principles."[209] There is an account given of an address attributed to Rabaut de Saint-Etienne, which evidently was not delivered, but was published.[210] The writer argued that there could be no danger in

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Biauzat says that he copied the motion, but he does not include it in his letters.

[206] *Lettres du Comte de Mirabeau,* No. 4, 7, 8.

[207] Biauzat, II, 64.

[208] Duquesnoy, I, 22.

[209] *Ibid.*

[210] *Journal des états-généraux,* I, 36–43; *Moniteur,* I, 34. The *Moniteur* says nothing of this speech not having been delivered, and attributes it to Rabaut. The *Journal des états-généraux* says that it was not delivered, but does not state who was the author. A statement is made near the beginning of the address that would lead one to think that the *Moniteur* had made a mistake in attributing this speech to Rabaut. Speaking of the motions of Rabaut and Chapelier, the speaker said: "Les honorables membres qui les ont soumises à la discussion des représentants de la nation méritent à la fois nos èloges." It seems improbable that Rabaut would speak thus of himself.

Since the *Moniteur* is a compilation of material drawn from various

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accepting the conferences; if the upper orders claimed that the commons by doing this had constituted themselves a separate order, such a report would not convince the public of the truth of the statement. He admitted that, in all probability, the conferences would be entirely useless as far as bringing about a reconciliation of the orders was concerned, and he was of the opinion that when they had failed, the commons would be ready to take more radical steps. In the meantime, his policy was to go slowly and to show by his acceptance of the conferences that the third estate was doing all it could to bring about a peaceful settlement of the difficulties.[211] The *Moniteur* gives an account of a speech by Viguier in which he affirmed that the best policy would be first to hear what the commission had to propose, since peace was too precious "not to be bought, if possible, by some days of waiting."[212] Thouret and Barnave were also among those who favored the commission.[213] The *Moniteur* reports a speech by Boissy d'Anglas in which he supported the moderate party. He emphasized the fact that not only would the commons not think of renouncing the principle of the vote by head, but this was also the demand of twenty-five millions of people who had elected these deputies. He assured his hearers that no one could have any idea of giving the commissioners power to agree to any method of verification except in the states general composed of the three orders. He then made a plea against hasty action, arguing that it was necessary to prove that any extreme action which they might be forced to take later had been preceded by all the "conciliatory means which the love of peace could inspire." The *Moniteur* quotes the speaker thus: "Hasty resolutions are not suitable to the representatives of twenty-five millions of people, stronger in the justice of their claims than in their numbers; and

sources (see discussion of the *Moniteur* by Christophelsmeier, in his thesis on the *Fourth of August*, 1789), it has been used only when the authors have evidently had access to sources not to be had by the writer. In the case discussed above, the *Moniteur* seems to have used some other source than the *Journal des états-généraux*, since the two do not agree absolutely.

[211] *Journal des états-généraux*, I, 39, 40; *Moniteur*, I, 34.

[212] *Moniteur*, I, 33.

[213] Duquesnoy, I, 22.

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without doubt the assembly upon whose decision the entire world now has its eyes, ought to rid itself forever of the slightest reproach of frivolity."[214] The speaker, while denouncing hasty action, saw what the future might have in store. He said: "Without doubt that day will come, soon perhaps, when, far from limiting yourselves to the action now proposed, you will constitute yourselves, not a separate order, not the chamber of the third estate, but the national assembly." At the close, the speaker expressed the hope that a conciliatory attitude on the part of the commons might lead the nobles to join them in the hall of the states general.[215]

It is evident from the above quotations that those who favored the appointment of the commission had little hope of the success of the undertaking. They felt that there was little to be expected from the nobles, and of course the third estate had no intention of giving up its demands. But these supporters of the plan for the conferences did hope to win public opinion and to remove the slightest danger of being accused of hasty action. They were seeking to prove to France that before taking matters into their own hands, the commons had exhausted every means of peaceful settlement, which were consistent with the instructions given them by their constituents. There were others, according to Boullé, who hoped by this means to win the clergy, and there were even those, he says, who expressed a hope that the nobles might be won.[216] It would seem that these latter were not very numerous, judging from the speeches which have just been referred to.

Those who opposed the plan for the conferences did so, according to Boullé, on the ground that the conferences would be use-

[214] *Moniteur*, I, 23. "Les résolutions précipités ne doivent point convenir aux répresentants de vingt-cinq millions d'hommes, forts de l'équité de leur prétentions plus encore que le leur nombre; et sans doute cette assemblée sur les décisions de laquelle le monde entier a maintenant les yeux, doit s'affranchir à jamais du moindre reproche de legérèté." This speech was evidently taken from some source to which I did not have access.

[215] *Ibid.*, 33.

[216] Boullé, in *Revue de la révolution*, XI, *Documents inédits*, 13.

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less, inasmuch as the nobles had already taken a stand directly opposed to the demands of the commons and there was no thought of the third estate abandoning its established principles. No conciliation, it was said, could be expected in such a situation. It was also argued that an agreement to try the conferences would arouse the ill will of the public, who would fear that such an action meant the giving up of their rights. There were those, too, who thought that during the time spent on the conferences every means would be used to win the curés to the side of the upper clergy and thus the conference would really be an injury to the cause of the third estate.[217] Duquesnoy quotes a deputy from Anjou as saying that "this assembly is the terror of the feudal nobles; they have done everything to prevent it; they are doing everything to dissolve it; they wish to gain time. Time may bring some changes, some change of ministry, and they are working for that."[218]

On May 16, when the discussion was renewed, Rabaut de Saint-Etienne introduced an amendment to his motion, to the effect, that the matter to be discussed in the conferences should be limited to the question of the verification of credentials, and that the commissioners should render an account in writing of what took place in the conferences.[219] During the discussion, various other suggestions were heard. For example, it was proposed that there should be a deputation substituted for the conferences, a deputation which, according to the statement made by Duquesnoy, should summon the two privileged orders to come to the hall of the estate. This was virtually a return to Chapelier's motion, although put in a milder form.[220] It was also suggested that Rabaut and Chapelier try to bring their motions together in some sort of a compromise.[221] This apparently met with little or no support.

[217] *Ibid.*, 14.

[218] Duquesnoy, I, 24.

[219] *Ibid.; Récit des séances des députés des communes,* 23; Biauzat, II, 6.

[220] *Récit des séances des députés des communes,* 24; Duquesnoy, I, 23; Boullé, in *Revue de la révolution,* XI, *Documents inédits,* 16.

[221] *Récit des séances des députés des communes,* 23; *Journal des états-généraux,* I, 46.

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By May 18, the deputies seemed to have grown weary of the long debates and endless discussions. Biauzat mentions two different persons who complained of the lack of brevity in the remarks of the deputies, but who were themselves guilty of the very thing which they condemned in others.[222] The writer says that one of these gentlemen had to be silenced by "overwhelming applause," the deputies not ceasing to clap until they saw him take his seat. At last, however, the discussions were ended and it came time for the final vote.

Biauzat tells us that the "commissioners from the governments," probably meaning the twelve assistants that had been chosen, retired to draw up the text of the motions.[223] They submitted them, according to this writer, in the following form:

"First—Should commissioners be appointed to confer with those of the clergy and of the nobility on the necessity of verifying the credentials in common, with the prohibition to either treat or confer on the distinctions of the orders, or the vote by head?

"Second—Should a declaration be made relating to that which has passed since the fifth of this month, with an invitation to the clergy and to the nobility to come to the hall of the estates, declaring expressly that we shall proceed in their absence as in their presence, allowing it to be foreseen that the present assembly believes that it is able to form the National Assembly?

"Third—By an amendment to the first motion, should commissioners be named with the restrictions explained in the motion and with the condition that there shall be drawn up a *Procès-verbal* of all that shall be said and done, in order to inform the king, France, and especially our constituents of our past conduct and of the motives of our future conduct?"[224]

Biauzat relates that when the call came for voting, certain members refused to vote. Among them were Mirabeau and Malouet. The reason given for the latter's action was that he was annoyed because no mention was made of his motion, while

[222] Biauzat, II, 66.

[223] Biauzat, II, 66.

[224] *Ibid.*, 67; Boullé, in *Revue de la révolution*, XI, 15, 16. Boullé gives only a brief summary of these motions.

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Mirabeau's action, Biauzat says, was interpreted by the people as simple rudeness, and it did not decrease the disfavor in which he was held.[225]

The votes having been collected, the result was found to be in favor of Rabaut's motion, 320 for the motion with its amendments, as against 66 for Chapelier's motion.[226] The third estate had thus decided to delay radical steps and show their willingness to at least confer on matters that were, in their opinion, subjects for discussion.

On May 19, the election of commissioners took place.[227] The plan followed was to divide the deputies into groups of about twenty-five persons, each of the groups to name sixteen persons and from these lists the sixteen receiving the most votes were to act as commissioners.[228] Duquesnoy relates that in choosing the commissioners, the word "persons" was used to avoid such expressions as "commissioners" and "deputies," evidence that there were those who feared that the election of commissioners might be interpreted to the disadvantage of the third estate.[229]

The election resulted in the choice of the following persons: Chapelier, Rabaut de Saint-Etienne, Target, D'Ailly, Mounier, Thouret, Barnave, Garat l'aîné, Bergasse, Le Grand, Dupont, Volney, Salomon, Viguier, Redon, Milscent.[230]

Duquesnoy tells us that the nobles were greatly displeased over the personnel of this commission, and he thought they had just

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[225] Biauzat, II, 67.

[226] Biauzat, II, 67; Boullé, *Revue de la révolution,* XI. Biauzat gives the vote as 7 for Rabaut's motion, without any amendments, 33 for the same motion with the first amendment, 320 for this with both amendments, and 66 for Chapellier's motion. Boullé simply gives the vote 320 for Rabaut's motion and 66 for Chapellier's.

[227] *Récit des séances des députés des communes,* 24; Biauzat, II, 70; Duquesnoy, I, 26; Boullé, in *Revue de la révolution,* XI, 16; *Revolution française,* XXIII, 413.

[228] *Récit des séances des députés des communes,* 24; Biauzat, II, 70; *Revolution française,* XXIII, 443.

[229] Duquesnoy, I, 27.

[230] *Récit des séances des députés des communes,* 24; Biauzat, II, 70; Duquesnoy, I, 26.

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cause to be alarmed.[231] He says: "There is not a man of peace among them. More than that, these persons are expressly charged to discuss nothing but the verification of credentials in common, and the nobles intend that that shall be the only thing not discussed."[232] In giving the list of the deputies, Duquesnoy points out what he considers the chief characteristics of each. Of Rabaut, he says: "ambitious, but they say moderate and wise;" of Chapelier, "a violent mad-man . . . an excessive Breton;" of Mounier, "his colleagues in the nobility say that he is violent and dangerous. I think they are right;" of Legrand, "the most tiresome and the most unbearable of all the babblers, dangerous on account of that and on account of his pride." He says of Volney, "incendiary" and of Milscent, "violent." It is evident, if Duquesnoy's characterizations were correct, that the nobles could hope for little from these men.

After the committee had been elected, a deputation of seven members was sent to the privileged orders to inform them that the third estate had finally elected their delegates.[233] Upon their return, the committee reported that the clergy had expressed its satisfaction that the work had been completed and promised to inform the third estate when they should have decided on the time for opening the conferences.[234] The nobility answered that it was then occupied with the naming of the commissioners, and so the *Récit* states, would inform the third estate of the result of the election as soon as it should be known.[235] Biauzat relates that he heard the nobles complaining because Target, who was the speaker for the deputation,[236] "had had much to say concerning the commons, but had not once pronounced the words nobles or nobility."[237] Duquesnoy says that "it was Target who an-

[231] Duquesnoy, I, 27.

[232] *Ibid.*

[233] *Récit des séances des députés des communes,* 25; Duquesnoy, I, 28; Biauzat, II, 70.

[234] Biauzat, II, 70; *Récit des séances des députés des communes,* 26.

[235] Biauzat, II, 71; *Récit des séances des députés des communes,* 26.

[236] Biauzat, II, 71; Duquesnoy, I, 28.

[237] Biauzat, II, 71.

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nounced to the clergy and to the nobility the choice of commissioners; he spoke with the same insolence that the Duc de Praslin had used in the third estate," [when the decrees of the nobles, passed on May 6, 11 and 12, had been presented.][238]

In the meantime, during the interval from May 15 to May 20, while waiting for the third estate to come to its decision on the matter of the conciliatory commission, the clergy had been occupied with its routine business and also with propositions of a somewhat radical nature.. Vallet tells us that on May 14, the Archbishop of Bordeaux renewed the proposition that the clergy inform the third estate that it was going to give up its pecuniary privileges and consent to the state assuming the debts of the clergy.[239] The author of this motion probably felt that such an act would hasten the action of the third estate in regard to the conferences, that order at that time not having reached its decision on the matter. The motion seems to have received little support. Vallet says that it was opposed on the ground that the third estate could have no doubt of the intentions of the clergy and of the nobility in regard to the renunciation of their pecuniary privileges, since the king had announced in the opening session that the privileged orders were willing to take this step, and that before the clergy should proceed to take such action, the third estate, on its part, ought to agree to guarantee the "honorary rights and prerogatives" of the other two orders.[240] Vallet states, in his account of the discussion which took place at this time, that one member of the clergy proposed that the order declare itself legally "constituted," thus placing itself squarely on the side of the nobles, while another member suggested that they join the third estate. Another deputy wished to vote on the motion of the Archbishop of Bordeaux for the renunciation of the privileges.[241]

Vallet says it was while these suggestions were being made that the president made a speech in which he reminded the clergy

[238] Duquesnoy, I, 28.
[239] Vallet, *Récit*, 28.
[240] *Ibid.*
[241] *Ibid.*, 26.

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that it had been customary in former times for the deputies of the states general to send a formal deputation to the king soon after they were assembled, for the purpose of paying their respects to him and assuring him of their loyalty and devotion. He suggested that deputies be sent to the third estate and to the nobility to arrange for carrying out this ceremony.[242] The decision of the clergy was that, instead of sending this deputation to the king, the president should inform his majesty of the desire of the members of the clergy to pay their respects to him in a formal manner.[243] Vallet adds that the wish of the clergy to perform this act of homage was to be entered on the register of the order and that the president was to assure the king that the delay in this matter had been the result of the desire of the clergy to bring about a union of the orders, in order that the three orders together might show their gratitude for the convocation of the estates.[244]

It was on this same day, if we may believe the account of the Abbé Coster, that a motion was made that the conciliatory conferences be abandoned, because of the apparent opposition of the third estate and of the nobility.[245] These various motions and suggestions made in the sessions of the clergy, indicate that certain members were becoming impatient and apparently were not at all sure of the outcome of the conferences.

On May 15, after the president had reported concerning his mission to the king,[246] the clergy decided to take up the provisional inspection of the cahiers,[247] the purpose of this being, according to Vallet, to aid later in drawing up a single cahier for the states general.[248] On May 16, while they were preparing to carry out this decision for the inspection of the cahiers, the deputies from Hinault protested against this action, stating that their credentials had instructed them to turn over their credentials

[242] Thibault, 194, 195; Vallet, *Récit*, 26, 27.
[243] *Ibid.*
[244] Vallet, *Récit*, 27.
[245] Coster, 14 mai.
[246] Thibault, 195, 196; Coster, 16 mai; Vallet, *Récit*, 28.
[247] Vallet, *Récit*, 28; Thibault, 195; Jallet, 57.
[248] Vallet, *Récit*, 28.

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to the three orders united. They added a written protest in which they claimed that the inspection of the cahiers by the clergy was in direct opposition to the intentions of the king and would tend to alienate the third estate.[249] This same day the president appointed a committee to draw up provisional rules of order [*règlement*] for the clergy.[250]

On May 19, the motion was again brought up that the clergy should announce through its commissioner, its willingness to give up its pecuniary privileges.[251] Vallet relates that the opposition argued that if the upper orders began by renouncing their pecuniary privileges, they would be sent back to their provinces without having done anything except consent to the payment of certain taxes, which would not relieve the third estate, and hence their renunciation would be useless.[252] Jallet states that the bishops tried to bring about a compromise in regard to the question of the renunciation of pecuniary privileges. They proposed, he says, that it should be left to the discretion of commissions as to whether they should announce the renunciation of their privileges. Jallet says that since there were three bishops among the commissioners, the higher clergy thought they could keep the declaration from being made. Jallet also tells of a discourse by the curé of Cherigne, in which the speaker defended the third estate against the accusations of the bishops that it was trying to destroy the power of the throne and of the church. The curé also attacked the intolerable and scandalous luxury of the clergy.[253] When the vote was finally taken in regard to the renunciation of the pecuniary privileges, it showed that at last the lower clergy had won. The order agreed to instruct the conciliatory commissioners to announce that the clergy was ready to submit to general taxation.[254] In the meantime, a deputation had come from the third estate to announce that the commons

[249] *Ibid.*, 30.
[250] *Ibid.;* Coster, 16 mai; Thibault, 199.
[251] Thibault, 199; Coster, 14 mai; Vallet, *Récit,* 33; Jallet, 59.
[252] Vallet, *Récit,* 33.
[253] Jallet, 60.
[254] *Ibid.*, 61; Thibault, 199; Coster, 18 mai; Vallet, *Récit,* 33.

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had named "certain persons to confer with the commissioners named by the clergy and the nobility."[255]

Coster tells us that the commissioners of the clergy met in the house of the Archbishop of Arles, and there agreed to do all that was possible to make the conferences have an air of neutrality. It was agreed that for this reason the conferences should be held in the Salle des Ambassadeurs at the chateau, and that the deputies should not be grouped according to their orders.[256] It is clear that the clergy were making an effort to conciliate the third estate and make the conferences a success.

The question of the renunciation of privileges by the clergy was not finally settled by the decision of May 19. The bishops were fighting hard to save their cherished prerogatives. On May 20, they succeeded in having the question reopened.[257] Again they tried to protect their rights. The Bishop of Saintes, according to Jallet, tried to overthrow the arguments of a curé who had stated the previous day that the privileges of the clergy were not legal, by citing the *Procès-verbal* of the estates of 1560 where mention was made of the "immunities" of the clergy, "inviting," says Jallet, "the curé to read eighteen volumes of that *Procès-verbaux*." Jallet asserts that the curé arose and answered the bishop so well by appeal to historical facts and by logical reasoning, that the bishop was silenced.[258] Jallet also tells of a bishop who, in opposing the motion, asserted that "the state and religion were in evil hands since there were one hundred and fifty deputies who had voted for the resolution of the previous day."[259] The higher clergy, however, were no stronger than on the preceding day, and the result was that the motion was again carried. The liberal party in the clergy had won a second time.[260]

Turning to the events which had been taking place, in the

[255] Vallet, *Récit*, 34; Jallet, 61; Thibault, 204. Only the first two state that the coming of the deputation interrupted the discussion.

[256] Coster, 18 mai.

[257] Ibid., 20 mai; Jallet, 61; Vallet, *Récit*, 34; *Procès-verbal historique*, 67.

[258] Jallet, 61.

[259] *Ibid.*, 62.

[260] *Procès-verbal historique*, 68.

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meantime, in the chamber of the nobility, we find that the *Procès-verbal* of the nobility indicates that they had been busy inspecting their cahiers and perfecting their organization. While they were verifying their credentials, a matter came up which shows that the nobles were as persistent as ever in the claim that they had full powers in the matter of verification of credentials. In the election of the deputies to the states general, three bailliages had been added to that of Metz and only two representatives given to those four bailliages. The nobles from Metz protested to the government, according to the *Procès-verbal,* but receiving no reply and taking silence for consent, they elected a third deputy. The question now came up as to the legality of the election of the third deputy. It was proposed in the chamber of the nobility to leave the settlement of the matter to the conciliatory commission, but the nobles refused to sanction the plan. Without paying any attention to the other orders, they decided that the third deputy from Metz was not legally elected, an indication that the nobility had no intention of forfeiting their right to verify their credentials.[261]

The *Procès-verbal* states that the nobles, in completing their organization, added two doorkeepers to the list of their officers, and also appointed a committee to draw up rules of order for the chamber, thus indicating that they considered their organization permanent.[262]

Up to May 19, the nobles had taken no steps towards the election of the commissioners which they had agreed on May 13 to appoint.[263] Now, however, on May 19, according to the *Procès-verbal* of the nobility, one of the members interrupted the verification of credentials by announcing that, without doubt, the third estate was then occupied with the election of the conciliatory commissioners, and that the clergy had already named its commissioners. The speaker urged the nobles to complete the work by electing their delegates to the conferences. When the matter was put to a vote, however, it was decided, according to the *Procès-*

[261] *Procès-verbal de la noblesse,* 50.

[262] *Ibid.,* 57.

[263] See pp. 49, 50.

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verbal, that they should listen to the report concerning the credentials of the deputies from Metz and the surrounding districts, instead of electing the deputies for the conferences.[264] It looked as if the nobles were deliberately trying to undo any action they had taken towards conciliation. However, one of the deputies whose credentials were under consideration, saved the situation by urging that the chamber suspend the consideration of his affair and take up the election of the commissioners. This suggestion was accepted and the nobles decided to choose their commissioners.[265] The *Procès-verbal* says that it was agreed that a vote of a third of the deputies should be necessary to elect a commissioner. The same account says that it was also decided that the commissioners should hold their positions for fifteen days, and at the expiration of the time, they should be replaced by other commissioners.[266]

It was while the nobles were preparing to vote on the commissioners, states the *Procès-verbal,* that the deputation came from the third estate, announcing that they had completed the election of commissioners. When this deputation entered the hall, the nobles arose to receive them. The members of the commons were invited to take seats, but preferred to remain standing, with their heads uncovered. The *Procès-verbal* adds that the nobles followed their example, and stood with heads uncovered, while M. Target delivered a speech in which he announced the election of the commissioners of the third estate.[267]

The three orders had at length come together on at least one thing; they were all prepared, finally, to begin the conferences. It had taken twelve days of negotiation to reach this point. The situation in the states general, on the eve of the opening of the conferences, was the natural result of the struggle of the third estate for political equality and majority rule. The deputies of the third estate, having come to the meeting of the states general fully determined to carry out the instructions of their constituents

[264] *Procès-verbal de la noblesse,* 60.
[265] *Ibid.,* 61.
[266] *Procès-verbal de la noblesse,* 64, 65.
[267] *Ibid.,* 64.

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by insisting on the union of the orders and the vote by head, and as preliminary and essential to this, the verification of credentials in common, had found that the nobles, at least, were prepared to resist with all their strength these demands which, if granted, meant the subordination of the privileged classes to the power of the despised third estate. The commons, forced to meet as a separate body because of the absence of their colleagues of the upper orders from the hall destined, as the third estate claimed, for the use of the three orders united, had adopted a policy of absolute inactivity, refusing to organize or consider themselves capable of organizing, attempting thus to convince the upper orders that the demands of the people of France must be heeded before the work of the states general could proceed.

The nobles, on the other hand, had verified their credentials, declared themselves legally constituted, and organized into a separate chamber, absolutely ignoring the demands of the third estate. The clergy, however, had adopted the rôle of mediator between the hostile forces, and had proposed the conciliatory conferences. But while this order was playing the part of peacemaker, there was a division in its own ranks between the higher and the lower clergy, that might bode ill for the unity of the order, if no agreement should be reached between the nobles and the third estate. The nobles had accepted the plan for the conferences, indicating at the same time by persisting in their decrees, that they had no intenton of renouncing their demand for separate chambers. The third estate had also accepted the proposition of the clergy, but had likewise indicated that they had no intention of giving up the principles for which they had been contending. Representatives of these opposing forces were now to come together in an attempt to find a peaceful settlement of the difficulties and thus avoid open warfare. Was this possible in the present temper of the nobles and the third estate? The conferences would answer the question.

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I.—ON DRYDEN'S RELATION TO GERMANY IN THE EIGHTEENTH CENTURY

BY MILTON D. BAUMGARTNER

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INTRODUCTION

While the literary relation of Dryden to Germany in the eighteenth century is not so significant as that of Shakspere and of Pope, it is nevertheless of sufficient importance to warrant investigation. No connected study of his relation to Germany has been made, and the discussions of the influence of his individual works are either incidental, or do not recognize the extent of such influence. Koch[1] scarcely mentions him in his treatise on the English and German literary relations in the eighteenth century; Vetter[2] and Eichler[3] do not show the indirect influence of *Mac Flecknoe* upon Bodmer; Fulda[4] and Pechel[5] see no con-

[1] *Ueber die Beziehungen der Englischen Litteratur zur Deutschen im 18. Jahrhundert.* (Leipzig, 1883.) Neither Flindt, *Ueber den Einfluss der englischen Litteratur auf die deutsche des 18. Jahrhunderts* (Charlottenburg, 1897), nor Seidensticher, English and German Literature in the 18. Century *Poet-Lore* II, p. 169 ff. (1890) mentions Dryden at all in connection with Germany.

[2] Bodmer und die englische Litteratur, *Johann Jakob Bodmer Denkschrift zum CC. Geburtstag,* p. 313 ff., Zürich, 1900.

[3] Christian Wernickes *Hans Sachs* und sein Dryden'sches Vorbild *Mac Flecknoe, Zeitschrift f. v. Litteraturgeschichte.* (Neue Folge) XVII, p. 208 ff. (1908). Eichler's admirable article exhaustively treats the relations of the two satires, and connects the influence of *Mac Flecknoe* in a general way upon German criticism. I have freely incorporated his results.

[4] See introduction to Christian Wernicke, in *D. N. L.,* XXXIX, p. 515 ff.

[5] Christian Wernickes Epigramme, *Palaestra,* LXXI, Berlin, 1909. All of Wernicke's works are included in this volume, which contains an exhaustive introduction also dealing with *Mac Flecknoe* and *Hans Sachs.* Ferdinand Eichler, *Das Nachleben des Hans Sachs vom 16. bis ins 19. Jahrhundert* (1904), with Fulda and Pechel sees no connection between Dryden's Satire and German criticism.

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nection between this satire and German criticism, while Schmidt,[6] Bernays,[7] Borinski,[8] and Meisnest[9] only incidentally suggest a relation between Dryden's *Essay on Dramatic Poesie* and Lessing's seventeenth *Literaturbrief;* and no noteworthy attempt has been made to show the influence of Dryden's dramas, fables, and lyrics upon Germany.

The purpose of this study is to present a connected investigation of the relation of Dryden to Germany, showing the manner of entrance chronologically, as far as possible, and the influence of his works.

CHAPTER I. SATIRES

1. "MAC FLECKNOE" (1662)

At the time of Dryden's introduction, Germany had not attained literary independence. In consequence his critical works first found favor, among which his satires,[10] although poetical in form, must be reckoned. *Mac Flecknoe,* a personal and literary satire,[11] was the first satire, and the first work of Dryden to appear in Germany (1702), leaving of all his works the deepest impression with the possible exception of his odes.

[6] *Lessing, Geschichte seines Lebens, und seiner Werke,* I, p. 376, Berlin, 1884.

[7] Michael Bernays, *Schriften zur Kritik und Litteraturgeschichte,* III, p. 103, 2d Edition, Berlin, 1903.

[8] *Lessing,* I, p. 111, Berlin, 1900.

[9] "Lessing and Shakespeare," *Publications of the Modern Language Association of America,* XIX, p. 234 ff. (1904).

[10] Dryden seems always to have had a fondness for the satire. In his student days at Westminster he translated the third satire of Persius as a Thursday night's exercise. In 1662 he wrote a "Satire on the Dutch"; from 1681 to 1687 he produced six satires in poetical form, of which three were political, one literary and personal, and two religious. In 1693 his *Essay on the Origin and Progress of the Satire* was published as a preface to his translations of the satires of Persius and a partial translation of those of Juvenile.

[11] *Mac Flecknoe, or a Satire on the true blue Protestant Poet T. S.* was written as a reply to the gross personal libels in Thomas Shadwell's satire, *The Medal by John Bayes.*

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Mac Flecknoe was introduced into Germany by Christian Wernicke, diplomat, poet, and as critic a forerunner of Lessing. Under the tutelage of the scholar, Morhof, he had learned to honor and appreciate the poet and critic Opitz[12] and his successors, Gryphus, Hoffmannswaldau, and Lohenstein. In one of his early epigrams[13] he says:

> "Den deutschen Pegases setzte Opitz in Lauf
> Und Gryph verbesserte was war an ihm getadelt,
> Hernach trat Lohenstein mit Hoffmannswaldau auf
> Die unsere Dichtkunst und sich durch sie geadelt."

The dramas of Gryphius had made him one of the foremost literary characters, but when Wernicke began his career, Hoffmannswaldau and Lohenstein were the idolized and imitated poets.

> "Der hat den ersten zwar, doch die den grószten Ruhm."[14]

Later however, the bombastic, picturesque style which the two latter had imbibed from the Italians, especially Marino, was recognized by Wernicke, and he characterized their poetry as containing "mehr falscher als wahrer Witz"[15]

Wernicke's sojourn as diplomat at Paris and London, incidentally, furnished an opportunity for familiarizing himself with the language, literature, and criticism of the two neighboring countries. During his stay in London, Wernicke became somewhat acquainted with Dryden's satires and owned a copy. Aside from *Mac Flecknoe,* he was familiar with at least *Absolom and Achitophel,* and The *Second Part of Absolom and Achitophel,* as he later employs a motive found in each of the two. This familiarity broadened his literary tastes, and the diplomatic service tended to sharpen his already keen, original, critical wit.

Through Wernicke, *Mac Flecknoe* was first introduced at

[12] His *Buch der deutschen Poeterei* (1624), little more than a compilation, had been a guide for German critics.

[13] "Ursprung und Fortgang der deutschen Poesie."

[14] Ibid.

[15] See note to the Epigram, Auf die Schlesischen Poeten, *Palaestra,* LXXI, p. 314.

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Hamburg. Thus Dryden, like Pope,[16] his pupil and follower, entered Germany by way of Hamburg, but unlike Pope, who came indirectly through the medium of France, Dryden was at first directly introduced from England. Hamburg, replacing Silesia, the home of Opitz, which had formerly been a literary center in a small way, at this time held the foremost place in the commercial, literary, and musical activities of Germany, although it would not be considered a great literary center like London or Paris.

The opera supported by well-to-do commercial patrons, had flourished there two decades under the leadership of composers like Keyser. The opera texts were written by poets and pseudo-poets who chose this as a remunerative profession. Likewise the blood-and-thunder novel and drama were in vogue, written in the figurative, bombastic style of Lohenstein and Hoffmannswaldau.

Among the contemporary writers, Christian Heinrich Postel (1658–1705), the author of many operas and of several epics provided with numerous learned commentaries, was the most worthy poet. Postel endeavored to defend Lohenstein, his patron saint in poetry, in a sonnet which appeared immediately after the publication of Wernicke's epigrams in 1701,[17] and this occasioned the first literary feud at Hamburg.[18] It was the spirit which prompted the sonnet, more than the sonnet itself, that induced Wernicke to take up the cudgel. He was striving for a principle, the rooting out of the " falscher Witz," while Postel, under the pretense of defending the renowned Silesian, Lohenstein, was in reality defending his own poetry patterned after him.

> " Schau . . .
> Wie jetzt dein Lohenstein, das Wunder aller Erden,
> Der Teutschlands Sonne muss mit recht genennet werden,
> So frech gelästert wird durch Stolz und Unverstand."[19]

Neither Postel's defense of Lohenstein, nor the charging of

[16] J. H. Heinzelmann, " Pope in Germany in the Eighteenth Century," *Modern Philology*, X, pp. 317–364 (Chicago, 1913).

[17] Elias, *Christian Wernicke*, Dissertation, München, 1888, p. 216.

[18] Rudolf Pechel, *Prolegomina zu Wernickes Epigramme*, p. 30.

[19] Ibid., p. 31.

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Wernicke with presumption, nor the ridiculous comparison of him with a hare hopping about on the dead body of the lion, Lohenstein, succeeded in silencing Wernicke. On the contrary, even though his literary work was so slight that he was regarded as a layman of little consequence, he completely silenced Postel by replying to the sonnet with his satire *Hans Sachs*[20] in pamphlet form, containing a foreword even more bitter than the satire itself. Shadwell's scathing satire warranted *Mac Flecknoe,* but Postel's sonnet did not warrant *Hans Sachs.* Wernicke endeavored to justify it on the ground that the sonnet was frequently wrongly ascribed to (Nicholas von) Bostel, a contemporary, whose name was confused with Postel. He sought to temper his criticism somewhat by saying that the translation was made to furnish the German reader an innocent pastime, designating it as a "lustige Erfindung."

Wernicke's theories of the satire which he sets up in the introduction to his epigrams in the main agree with those of Dryden. Under the influence of Boileau and Dryden he, like the latter, amends his former criticism with the one difference that he frankly acknowledges his change of viewpoint and justifies the change.[21] He now deprecates in the Silesian idols and their followers, the fine figures of speech and insists that thoughts are the soul of poetry just as Dryden insists on wit.[22]

According to Dryden, "The function of the satire is to lash

[20] "Ein / Helden-Gedicht / Hans Sachs genannt / aus dem Englischen übersetzet / Von Dem Verfasser / Der Uberschriffte / und / Shäfer-Gedichte / nebst einigen nöthigen / Erklärungen / des Ubersetzers (Altona, 1702)."

[21] "Man hatte als man diese Überschrifft schrieb, nicht allein keine Englische und Frantzösiche Poeten; sondern auch sogar die besten Lateinischen nichts anders als der Sprache halber gelesen. Wannenhero es kein Wunder, dasz man sich damals in seinem Urtheil etwas verstiegen." See *Palaestra,* LXXXI, p. 315 (Berlin, 1909).

[22] "Man hält davor, dasz wir bisshero in unseren Versen mit eitlen und falschen Worten zu viel gespielet, und sehr wenig auf das bedacht gewesen, was die Welschen Concetti, die Frantzosen Pensees, die Engländer Thoughts und wir füglich Einfälle nennen können; da doch dieselbe die Seele eines Gedichtes sind." Ibid., p. 120.

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vice into reformation;[23] the true end of satire is the amendement of vices by correction;[24] or to reprehend severely vice, ignorance and error."[25] To lampoon another he holds dangerous but justifies it on two grounds: first, "to avenge when we have been affronted in the same nature; or have in any way been notoriously abused and can make ourselves no other reparation"; and second, "it is an action of virtue to make example of vicious men when they become a public nuisance both for their own amendment and for the terror of others." The most effective attitude to assume in a satire, he maintains, "is a sharp well-mannered way of laughing a folly out of countenance." In the *Essay on the Origin and Progress of the Satire,* Dryden holds up, as his ideal of characterization in satire, his own character sketch of the Duke of Buckingham, whom he satirizes under the name of Zimri in *Absolom and Achitophel,* as a retaliation for the latter's ridicule of him in *The Rehearsal.*[26]

Wernicke holds that the duty of the satirist is to portray naturally the recognized prevailing vices and follies of the times.[27] With Dryden he maintains that the best manner of correcting folly in the world is with a laughing countenance (mit lachendem Munde),[28] but to do this much experience and sane reflection are necessary. The lampoon, he justifies also on the ground of being wrongly abused. The prevailing vices and follies he would portray only in a general way, so that those who saw their own image in the portrayal would have no cause to be angry with the author.

[23] Foreword to *The State of Innocence* (1674), *Scott-Saintsbury,* V, p. 100 ff.

[24] Foreword to *Absolom and Achitophel* (1681), ibid., IV, p. 214.

[25] *Essay on the Origin and Progress of the Satire* (1693), ibid., XIII, p. 1 ff.

[26] "The character of Zimri in my Absolom is, in my opinion, worth the whole poem: it is not bloody, but it is ridiculous enough: . . . If I had railed, I might have suffered for it justly: . . . I avoided the mention of great crimes, and applied myself to the representing of blind sides and little extravagances; to which the wittier a man is, he is generally the more obnoxious." "On the Origin and Progress of the Satire," *Scott-Saintsbury,* XIII, p. 99.

[27] *Palaestra,* LXXI, p. 118.

[28] Ibid., p. 117.

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Ironically he adds that out of courtesy he would mention neither the real nor the assumed names of the opponent who attacked him first without cause in order to give them "die völlige Freyheit in kurtzer Zeit mit ihren Schriften vergessen zu werden."[29]

In practice there is little difference between Dryden and Wernicke in the manner of satirizing. Both were by nature too harsh and too severe. In the foreword to *Absolom and Achitophel,* Dryden says: "I can write severely with more ease than I can gently." Wernicke likewise admits that he was inclined to apply the lash. He maintains that in his early satirical epigrams, "hat man die Laster eifrig und gleichsam mit der Peitsche in der Hand verfolget";[30] and he tacitly admits his harshness by suppressing the sharpest criticism in the foreword of the second edition of *Hans Sachs.* Similarly there is little difference in the use of real names. With the exception of *Mac Flecknoe,* Dryden nowhere names his opponent, while in *Hans Sachs* Wernicke uses the transparent anagram "Stelpo" for Postel.

The influence of Dryden upon Wernicke is evident from his accidental choice of *Mac Flecknoe.* He tells us in the preface how he chanced upon it when preparing a reply to Postel's sonnet. "Als ich nun mit diesen Gedanken im Schwange ging, so gerieth ich unversehens unter meinen zusammengesammelten Schrifften auf folgendes sinnreiches Gedicht eines berühmten Englischen Poeten, worinnen er eine Person aufgeführet hat, welche meinem Widersacher in allen Stücken gleichet, und welche, überdem, damit er sich an der Vergleichung nicht stossen möge, des damaligen Königs von Engelland wohlbestelter gekrönter Poet war. Die Versuchung war zu grosz, dass ich derselben hätte widerstehen können, und das Gedicht kaum überlesen, dasz ich schon dasselbe in unsere Sprache zu übersetzen und dem Teutschen Leser die unschuldige Kurtzweil zu gönnen den Schluss gefasset."[31] Wernicke acknowledges his debt to Dryden in the foreword of both editions of *Hans Sachs.* In the first he says: "Was im übrigen die Übersetzung dieses Gedichtes betrifft, so

[29] Palaestra, LXXI, p. 119.
[30] Ibid., p. 117.
[31] See Elias, p. 220 ff.

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wird der Leser, dem hiesiger Ort kündig, ohne meine Anmerkung gleich von selbst ermessen können, dass obgleich dem Englischen Poeten die Erfindung und Ordnung desselben abgeborget, mir dennoch zum Wenigsten die Helfte der Gedanken eigentümlich zugehöre." In the second edition he lays even greater claims to original ideas: "Die Erfindung desselben hat man einem Englischen Poeten abgelehnet, die meisten Einfälle aber von selbst nehmen müssen."

As Wernicke has said, the general plan of *Hans Sachs* is borrowed from *Mac Flecknoe*. Both present the coronation celebration of the chosen heir in the realm of nonsense. They consist of two monologues by the sire king set in a framework of three explanatory links—the introduction, a connecting link, and the conclusion. The introduction (both Dryden and Wernicke 1–13) describes the aged monarch who resolves to abdicate the throne in favor of one of his numerous sons; the first monologue (Dryden 14–59, Wernicke 14–86) names and characterizes the successor, setting forth the reason for the choice; the connecting link (Dryden 60–138, Wernicke 87–170) gives a detailed description of the seat and the ceremony of the coronation; the second monologue (Dryden 139–210, Wernicke 171–263) contains the retiring king's prophecy and testament to the enthroned heir; and the conclusion (Dryden 211–217, Wernicke 264–269) depicts the disappearance of the declaiming king through a trap door, leaving behind his robe which is to clothe his heir with a double portion of his art.

Wernicke follows Dryden throughout in the motives, except where he refers to the literary conditions at Hamburg, and quotes or parodies the works of Postel. The general motive, however, of parodying and quoting from Postel is borrowed from Dryden. He imitates Dryden even in minute details: as for example, Dryden signs himself: "by the Author of Absolem and Achitophel" and Wernicke: "Von dem Verfasser der Uberschriffte und Schäfer-Gedichte." The motives which Wernicke borrows from Dryden are: Human things decay and are subject to the decree of fate; an old monarch in the realm of ignorance, weary of rule, wishes to abdicate in favor of an heir; the choice from among

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his numerous sons of the one most resembling him; the elimination of all the others, because a beam of wit escapes their souls at times; the ridiculous personal appearance of the heir; the acknowledgment by the king that he was sent to prepare the way for his heir; the musical ability of the king and his heir; the tears of joy shed in rapture over the hopeful son at the conclusion of the first monologue; the description of the environment and seat of the crowning celebration; the prophecy foretelling the reign of the prince of ignorance in the playhouse; the spreading of the report of the crowning celebration through the town; the detailed account of the crowning celebration such as the arrival of a large concourse of people, the carpeting of the way with the leaves of the works of forgotten poets, the bodyguard composed of disappointed publishers, captained by the publishers of Dryden and Wernicke; the cloud of dullness hovering over the heir as he sits next to Rome's other hope; the oath of office compared to that of Hannibal; the vow to maintain dullness in the realm until death; the anointment prepared by the king's own hands; the crown of flowers; the omen of the owls compared with that of Romulus; the sire's prophecy of the expansion of the realm; the interruption of the monologue by the "Amen" of the people; the admonition to increase in impudence and ignorance and to suffer "pangs without birth in fruitless industry"; to toil without wit; to let others in triumph tread the stage; to sketch his fools and heroes in his own image so that posterity might recognize them as his own issue; to trust nature and write naturally-dull; the quotations and parodies of the opponents, Shadwell and Postel; the inoffensive satires of the opponents; the opponent's plays are only farces; the admonitions to practice anagrams and set their own songs to music: and finally the disappearing of the declaiming bard through a trap door, and the leaving behind of his robe to the new king with a double blessing of his art.

The two motives which Wernicke took from the other satires of Dryden have already been referred to above. The first is from the passage in *Absolom and Achitophel* (555–556), devoted to satirizing Zimri (Buckingham). It acuses him of going to extremes in favorable criticism of friend and unfavorable of foe.

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"Railing and praising were his usual themes,
And both, to show his judgment in extremes."

Hans Sachs, 238–239:

"Fleuch wenn du tadeln wilt, bey Leib die Mittel-Straass.
Und wenn du jemand rühmst, so halt' auch keine Maass.'"

The other motive not found in *Mac Flecknoe* is from *The Second Part of Absolom and Achitophel* (457–458), and is the prophetic blessing to be dull, pronounced upon the heir at birth by the nurse.

"The midwife laid her hand on his thick skull,
With this prophetic blessing—Be thou dull."

Hans Sachs, 17–18.

"Selbst seine Amme fasst' nach der Gebuhrt ihn um,
Weissagt' und segnet' ihn mit diesem Wunsch: sey dumm."

This is again repeated, line 90.

"Bestetigend den Wunsch der Ammen: Sey du dumm."[32]

This comparison of motives is striking, because the same motives which Dryden applied to Shadwell in the satire, lend themselves admirably to satirizing Postel, thereby substantiating the claim of Wernicke made in the preface, "welcher (Shadwell) meinem Widersacher (Postel) in allen Stücken gleichet." Dryden's motive of choosing the dead poet, Flecknoe,[33] as the sire king, finds a happy parallel in Wernicke's choice of Hans Sachs, so far as the force of the satire is concerned, as it holds Postel up to genuine ridicule.

Other parallel motives that were equally applicable to the German situation are: The imitation of renowned poets (Shad-

[32] See Eichler, Loco citato, p. 218; and Pechel, Loco citato, p. 34.

[33] Richard Flecknoe, a dull but prolific Irish poet, who died in 1678, was chosen as the father of Shadwell and furnished the name and background for the satire. He seems to have been a stock character for satirizing and Dryden speaks of him with contempt in his dedication of *Limberham* (1678).

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well imitated the humors of Jonson, while Postel emulated Euripides); the satirizing of their opponents' works and characters; the lame verses in Shadwell's opera, *Psyche,* and the effusive style in Postel's works; and the musical ability of the two opponents.[34]

With few exceptions, the motives which Dryden applied to his English opponent, Wernicke applied to his German opponent with equal force. Some of the most striking variations in motives are in connection with the seat of the coronation, the attending throng, and the disappearance of the sire king at the conclusion. Dryden has Mac Flecknoe erect Shadwell's throne in the nursery, a training school for young actors, which is situated near the Barbican, formerly a watchtower, but now a ruin surrounded by brothel houses. He has Decker prophesy that a prince of dullness should reign here, while Wernicke substitutes a witch for Decker.

In *Mac Flecknoe* the throng comes to the crowning festivity from "near Bunhill and distant Watling Street," London cemeteries, while in *Hans Sachs* Wernicke prefers to have it come from "Dreck wall," "Mistberg" and "Gänse-Marckt,"[35] thereby substituting for the throng of the forgotten past, the living rabble inhabiting Hamburg.

Dryden's motive of having Mack Flecknoe disappear through a trap door, is a parody on Shadwell's play, *Virtuoso,* in which Bruce and Longville, two of the characters, make a third, Sir Formal Trifle, similarly disappear. Wernicke apparently was pleased with the motive, and finding no parallel in Postel's Works, has "V-l" (Vogel),[36] who sang the comical roles in Postel's operas, manipulate the trap door which sent Hans Sachs beneath.

[34] Shadwell claimed to have assisted in composing the music for his operas, hence Dryden has him perform on the lute, while Postel paraded his performing on the piano, which Wernicke ridiculed.

[35] While these ludicrous names of streets in Hamburg are not necessarily in the slum district, yet they were supposed to suggest the rabble.

[36] Bodmer (*Critische Schriften,* 1741) in a footnote to his first edition of *Hans Sachs* says: "Vogel war ein Sänger in der Opera, der die lustige Partien von Postels Erfindung abzusingen pflegte, und dem zu gefallen der Pöfel sehr in die Opera lief."

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The influence of Dryden upon Wernicke is conclusively proven by the direct translation. Not only did he follow the general plan of *Mac Flecknoe* in *Hans Sachs* and incorporate many of the motives but he has also translated a large number of the lines, either word for word, or freely adopted them in his satire, especially in the first edition. Nevertheless, the omission of "aus dem Englischen übersetzet" in the title of the second edition is justified. He has expanded *Mac Flecknoe,* which has 217 lines, into a German satire of 269. The material he rejected in Dryden's satire dealt with literary conditions in England which would not apply to the literary conditions in Germany; and the new material introduced has to do entirely with literary and personal criticism of Postel, and literary conditions of Hamburg and Germany. The connecting links show the larger percentage of parallel lines. The parallel lines follow:

DRYDEN	WERNICKE
1/2. All human things are subject to decay	1/2. Was Irrdisch ist, vergeht; was Menschlich ist nimmt ab
And, when fate summons, monarchs must obey.	Und ein Monarch fällt selbst, wenn's Schicksal winckt, ins Grab.
3. This Flecknoe found, who . . had governed long,	3. Diss wurd Hans Sachs gewahr, der Deutschland lang beherrscht.
5/6. In prose and verse was owned without dispute	5/6. Der in der Dummheit Reich, sonst Lobesan genannt,
Through all the realm of Nonsense absolute.	Durch Reim ohn' allen Streit erhielt die Oberhand.
7/9. This aged prince, now flourishing in peace	7/9. Lang war in Fried' und Ruh
And blest with issue of a large increase,	ihm wiedrigs nicht begegnet,
Worn out with business, did at length debate	Er fand mit manchem Sohn Unzehlbar sich gesegnet;
10. To settle the succession of the state;	Doch alt, und durch die Last der Sorgen matt gemacht,
11. And pondering which of all his sons was fit	10. So war er, wer im Reich'ihm folgen solt, bedacht.
12/14. To reign and wage immortal war with wit,	11. Er dachte welchem Sohn es möchte meist gebühren,
	12/14. Unendlich Zanck und Streit mit der Vernunft zu führen.

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Cried, "'Tis resolved, for Nature pleads that he
Should only rule who most resembles me.
15. Shadwell alone my perfect image bears,
17. Shadwell alone of all my sons is he
18/19. Who stands confirmed in full stupidity.
The rest to some faint meaning make pretence,
20. But Shadwell never deviates into sense.
21/24. Some beams of wit on other souls may fall,
Strike through and make a lucid interval;
But Shadwell's genuine night admits no ray,
His rising fogs prevail upon the day.
25. Besides his goodly fabric fills the eye

26. And seems designed for thoughtless majesty.
29. Heywood and Shirley were but types of thee,
30/31. Thou last great prophet of tautology.
Even I, a dunce of more renown than they,
32. Was sent before but to prepare the way,
34. To teach the nations in thy greater name.
37. My warbling lute was but the prelude to that glorious day,
43 Me thinks I see the new Arion sail,
60. Here stopped the good old sire and wept for joy,

Und ruft': Es ist geschen! Denn Hertz und Neigung schlisst,
Dass dieser herrschen soll, der mir meist ähnlich ist.
15. Mein Stelpo alleine zeigt mein Bild an seiner Stirn,
19. Mein Stelpo allein ist der von allen meinen Söhnen,
22/23. Und die Undeutligkeit am klärsten uns vorstellt.
Der andern Meynung kan man noch mit Müh' errahten,
26. Und auch im rechten Weg' aus Irrthum sich nie findt.
27/30. Bissweilen fällt ein Funck von Witz an andrer Seele,
Und blitzt ein kurtzes Licht durch die verstockte Höle;
Nur Stelpos Grönlands Nacht duldt keinen solchen Riss,
Kenn't nichts als dürre Kält und dicke Finsternüss.
31. Zu dem so findt man gleich, wenn man sein Antlitz schauet,
33. Dass Unbedachtsamkeit in voller Majestät
39. Zes' Zeidler, Schoch—sind—nur arme Sünder; . . .
42–43. Du groszer Patriarch von der Pritzmeisterey.
Ich selbst ein Dudentopf berühmter als die andern,
45. Auf dass ich dir den Weg bereitete, O Held,
46. Und deinem gröszern Ruhm verkündigte der Welt.
53. Doch war mein Dudelsack ein Vorspiel nur von dir,
55. Mich dünckt, ich hör anitzt dich neuen Orpheus spielen,
87/88. Hier schwieg, gleich als vor Freuden entzückt, der Greis, und weint

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61. In silent raptures of the hopeful boy.
85/88. Here Flecknoe, as a place to fame well known,

Ambitiously designed his Shadwell's throne.
For ancient Decker prophecied long since
That in this pile should reign a mighty prince.
89. Born for a scourge of wit and flail of sense,
94/95. Now empress Fame had published the renown

Of Shadwell's coronation through the town.
96/97. Roused by report of fame, the nations meet
From near Bunhill and distant Watling-street.
98/99. No Persian carpets spread the imperial way,

But scattered limbs of mangled poets lay;
103. But loads of Shadwell almost chocked the way.
104/105. Bilked stationers for yeomen stood prepared
And Herringman[87] was captain of the guard.
106/107. The hoary prince in majesty appeared,
High on a throne of his own labor reared.
109. Rome's other hope and pillar of the state.
110/111. His brow thick fogs instead of glories grace,

And lambent dulness played around his face.

Die er an seinem Sohn erlebt, und fing mit beyden . . .
121/124. Hans Sachs hatt dieses Haus vor allen wehrt geschätzt,
Und hier des Stelpos Thron ehrgeitzig hingesetzt:
Denn es wuste eine Hex schon lang vorher zu sagen,

Dass ein Tyrann allhier . . .
127. Geborn dem Witz zu Trotz, und der Vernunft zur Bürd'.
128/129. Nun hatte Fama schon (2d edit.), die nie mit Schweigen sündigt,
Des Stelpos Kröhnungs-Tag der gantzen Stadt verkündigt,
130/131. Es kahm'ein grosses Volk das Haus und Holf liess leer,
Biss zu dem Gänse-Marckt vom Dreckwall, Mistberg her.
132/133. Der Weg war nicht wie sonst belegt mit köstlichen Tapeten
Statt derer lagen hier viel Bogen der Poeten.
137. Doch Stelpos eigene Werck' erstickten all die andern:
138/139. Betrogene Drucker War'n anstat der Leibwach' hier,
Und S——[88] ging behertzt als Haubtmann allen für.
140/141. Vor'm Fürsten sah man zuletzt das Volck sich neigen,
Und ihn den Thron, den er selbst aufgericht, besteigen,
Und ihm zur rechten Hand, Roms andre Hoffnung saas.
144/145. Er war mit dicken Dampf gleich einer Wolck'-umfangen,
Und kecke Dumheit spielt 'um die verwelckte Wangen.

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112/113. As Hannibal did to the altars come,
Sworn by his sire a mortal foe to Rome;
114. So Shadwell swore, nor should his vow be vain,
115/117. That he till death true dullness would maintain;
And, in his father's right and realm's defense,
Ne'er to have peace with wit nor truce with sense.
118. The king himself the sacred unction made,
126/127. His temples, last, with poppies were o'erspread,
That nodding seemed to consecrate his head.
128/129. Just at that point of time, if fame not lie,
On his left hand twelve reverend owls did fly,
130/136. So Romulus, 'tis sung, by Tiber's brook,
Presage of sway from twice six vultures took.
The admiring throng loud acclamations make
And omens of his future empire take.
The sire then shook the honours of his head,
And from his brow damps of oblivion shed,
Full on the filial dullness: long he stood,
138. At length burst out in this prophetic mood:
139/142. Heavens bless my son! from Ireland let him reign
To far Barbadoes on the western main;
Of his dominion may no end be known

146/147. Als einsten Hannibal, vors Vatters Altar tobt,
Und ewige Feindschafft Rom mit einem Eid anlobt'
148. So schwur auch Stelpo hier, und wahrlich nicht vergebens
149/151. Dass er wolt'unermüdt Zeit seines gantzen Lebens
Ein Feind der Reinlichkeit der deutschen Sprache seyn,
Und keinen Frieden nicht mit der Vernunft gehn ein,
152. Der König wolt'auch jetzt die Salbung selbst verrichten,
156. Ihm wurd hernach ein Krantz von Blumen aufgesetzet,
157. Itzt sinckend als im Schlaf sich neigten vor der Stirn.
160/161. Zwölff Eulen sahe man, wenn nicht die Leute lügen,
Im selben Augenblick Ehrwürdig vor ihm fliegen;
162/168. Und weil die Adler einst den Euln in Anzahl gleich.
Dem kühnen Romulus verkündigten das Reich,
So wurd auch jetzt vom Volck die Deutung angenommen,
Und jeder strebt im Wunsch dem andern vorzukommen.
Es war der alte Greyss hierüber sehr erfreut,
Und schüttelte vom Kopff Dämpf der Vergessenheit
An seines Sohnes Stirn. Lang stand er wie entzücket,
170. Zuletzt brach der prophet in diese Wörter aus:
171/173. Der Himmel segne dich du Zier von meinem Hauss,
Dass deine Herrschafft nie mög' seines gleichen haben,
Und sich von Schweitzerland erstrecke bis in Schwaben

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And greater than his father's be his throne;
144. He paused, and all the people cried "Amen."
145/146. Then thus continued he: "My son advance
Still in new impudence, new ignorance.
147/148. Success let others teach, learn thou from me
Pangs without birth and fruitless industry.
149/151. Let "Virtusos" in five years be writ,

Yet not one thought accuse thy toil of wit.
Let gentle George (Etherege) in triumph tread the stage,

154. And in their folly show the writer's wit.
155/156. Yet still thy fools shall stand in thy defence
And justify thy author's want of sense.
157/162. Let them all by thy own model made
Of dullness and desire no foreign aid,
That they to future ages may be known,
Not copies drawn, but issue of thy own.
Nay, let thy men of wit too be the same,
All full of thee and differing but in name.
165. And when false flowers of rhetoric thou wouldst cull
166/167. Trust nature, do not labor to be dull;
But write thy best and top, and in each line

175. Und man den Vater kaum erkenne vor dem Sohn,
177. Er schwieg, und alles Volck sagt': Aman.
178/179. Hernach so fuhr er fort: Mein liebster Sohn nimm du
Beyds in Unwissenheit und in Unverschämtheit zu.
181/183. Lern'aber du von mir arbeiten ohne Nutzen;
Lern wie man lange Zeit in Kindes-Nöhten ringt,
185. Und(lass) Lohenstein und Gryph ein prächtig Trauerspiel, Schreiben,
188. Lass die mit groszer Müh'oft Jahr und Tag nachsinnen,
194. Lass ihn (Bostel) wie im Triumpf deine Bühn beziehen,
197. Und des Verfassers Witz in deiner Thorheit zeigen;
198/199. Weil jeder Narr den du in deinem Singspiel weist,
Dein wahres Bildnüs ist, und ewig Stelpo heisst.

Mach, dass man nicht erkenn, wem du den Vorzug giebst,
Und dass du als Papa, die gleich mit jehnen liebst.
200/203. Lass deine Helden auch mit jenen sich verpaaren
Und unterscheid sie im Nahmen mit den Narren.
204. Sieh' aber zu, wenn du nach Reim, und Versen fühlest.
206/207. Vertrau der Natur, schreib was dir erst fällt ein,
Und brich dir nicht den Kopf ein Dudentopf zu sein.
208/209. Lass deine Feder nicht an Fremdling sich vergaffen;

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171/172. Nor let false friends seduce thy mind to fame
By arrogating Jonson's hostile name;
175. Thou art my blood, where Jonson has no part;
183. Promised a play and dwindled to a farce?

199/201. With whatever gall thou setst thyself to write
Thy inoffensive satires never bite;

In thy felonious heart though venom lies;
210/214. He said, but his last words were scarcely heard,
For Bruce and Longville had a trap prepared,
And down they sent the yet declaiming bard.
Sinking he left his drugget robe behind,
216/217. The mantel fell to the young prophet's part
With a double portion of his father's art.

Was hat Euripides mit dir und mir zu schaffen,
211. Du bist mein Blutt, an dem hat dieser gar kein Theil.
254/255. Und weil er einst entfernt die Traur-Spiel von der Heerd,
So mach das die verkehrt zu einem Lust-Spiel werd'.
232/233. Zeig, dass dein frevlend Hertz viel Gall und Gift umstricke

Ob Taratantel gleich es gleich nur Lachen wircke;
264/269. Er sagt', und hatte kaum das letzte Wort gesprochen,
Als V—l welchen hier den falsch Grund gebrochen,
Ihn taumelnd unter sich auf einem Fallbrett sandt';
Er sanck, und liess' in Eil zu einem Unterpfand
Sein Schurtzfell Stelpo nach, worin er mit viel Segen
Verduppelt seine Kunst.

But Wernicke did more than transform an English satire into a genuine German satire. Through *Hans Sachs* he introduced a direct personal literary criticism which since the time of Gottfried von Strassburg, had not existed in Germany. Hans Sachs and Postel represent two widely divergent extremes in poetic form. At the one extreme stands Hans Sachs, the best representative author of the deteriorated poetry of the sixteenth century "Meistersänger" with its unpoetic "Knittelvers"; at the other extreme

[37] Herringman was a noted printer of that time. Formerly he was Dryden's printer and Shadwell made him a journeyman of Herringman in the satire against him. Globe edition, p. 147. Note.

[38] S—— was Spiering, Postel's printer. See Bodmer in *Critische Schriften*, p. 127, 1741.

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is Postel, a representative writer of the highly picturesque and bombastic poetry borrowed from the Italian, Marino, with its French imported Alexandrines. Hence this direct personal criticism of Hans Sachs and Postel is of greater significance than a mere personal lampoon, as it is a real criticism of existing literary defects; and like Dryden in *Mac Flecknoe,* Wernicke in *Hans Sachs* extended his criticism to other poets and their works.

Before resorting to the satire, Wernicke had endeavored to reform the poetry of his country by frankly and directly pointing out its insipidity, as is evident from the foreword of his works (1704 Edition)[39] Although his ideals were in advance of the times and were rejected by his contemporaries, his introduction of the satire with the exaggerated personalities, paved the way for the toleration and appreciation of sane, direct personal literary criticism.

a. Hunold's Connection with Hans Sachs

The satire also brought literary cliques and encouraged literary feuds, such as the one now in progress at Hamburg, and the later Swiss-Gottsched and Lessing-Klotz controversies. In Hamburg the feud between Wernicke and Postel had run its course, but the influence of *Mac Flecknoe* continued indirectly through *Hans Sachs.* The controversy was now taken up by Christian Friedrich Hunold (1680–1721), a debauched Hamburg opera writer. Under the pretense of defending Hoffmannswaldau he entered the field against Wernicke with a satirical comedy, *Dem Thörichten Prietschmeister, oder Schwermenden Poeten, in einer lustigen Comoede* (Coblentz, 1704).

In the preface Menantes (Hunold's assumed name) says that he is entering the controversy, since Wernicke had "einen ge-

[39] "Man hält davor; und man hoffet es werde dem Verfasser von keinem vernünfftigen Menschen übel gedeutet werden, dass er seine Meinung so frey heraus saget." . . . "Man ist gäntzlich der Meinung, dass was die Frantzösische Schreib-Art zu der heutigen Vollkommenheit gebracht hat, meistenteils daher rühre; dass sobald nicht ein gutes Buch an das Licht kommt, dass nicht demselben eine sogenannte Critique gleich auf den Fuss nachfolgen solte,—Sintemahl dadurch ohne alle Ergernüss dem Leser den Verstand geöffnet, und der Verfasser in gebührenden Schrancken gehalten wird."

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lehrten und wohlangesehnen Mann auf das schäntlichste in einem Pasquil, Hans Sachs genannt, angegriffen,—und mir durch die gröbsten und unflätigsten Columnien die Feder aus der Hand gerissen."[40] The theme is the same as in the original. Wernicke is the prince of dullness (Erzprietschmeister), and in the form of an anagram two fool roles are assigned to him in the comedy. As "Wecknarr" he is the arch-fool, and as "Narrweck" he is a merry fool of the vulgar type who falls in love with the daughter of a cobbler and marries her. The motives found in *Hans Sachs* which he borrows are: the crowning of the opponent (with pitch instead of flowers); the blessing pronounced by the spirit of Hans Sachs, who crowns him as his successor as king of poets, which runs:

"Ich segne dich: sey dum
In lästern sey nicht stum
Was gleich ist mache krum
Und frage nichts darum."

the quotations from and parodies on the works of the opponent (found largely in voluminous foot-notes); the accusation of plagiarism (dwelt upon at great length although unfounded); the music motive (introducing the bagpipe and the lute); the motive that Wernicke's works were unsold (and were in junk shops); and finally the personal ridicule of the opponent which deteriorates into personal abuse.

b. Bodmer's Connection with Hans Sachs

The influence of Dryden continued indirectly through the revival of *Hans Sachs*. After the Hamburg literary feud, *Hans Sachs* disappeared for a time, but was again revived in the next great literary controversy which took place between Bodmer and Gottsched and their allies. In this controversy Bodmer intro-

[40] Hunold refers to the epigram, "An den Deutschen Maevius" beginning:

"Freund hast du keinen Witz, und willst doch etwas schreiben
Das dem Verleger nicht soll auf dem Halse Bleiben,"

which Wernicke directed against him for the numerous attacks since the appearance of *Hans Sachs*. See *Palaestra*, p. 42 ff.

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duced Wernicke's satire as a "Streitschrift" against his opponents. Although primarily interested in the religious epic, like Dryden, the satire always fascinated Bodmer. As early as 1720, he was planning to write satires.[41] In 1737 he translated two books of Butler's *Hudibras,*[42] and ten years later Pope's *Dunciad,*[43] an imitation of *Mac Flecknoe,* which he had originally intended to adapt to German conditions[44] as Wernicke had *Mac Flecknoe.* He was also familiar with Swift's *The Battle of Books,* as in his *Charakter der Deutschen Gedichte* (1734) he adapts Swift's characterization of Dryden to Amthor, a contemporary poet.[45] Together with Wieland, Bodmer wrote *Edward Grandison's Geschichte in Görlitz,*[46] as a reply to Schönaich's *Die ganze Ästhetik in einer Nuss,*[47] and he also encouraged Wieland in writing the *Ankündigung einer Dunciade für die Deutschen.*[48]

Bodmer was first introduced to *Hans Sachs* through a letter from J. U. König, dated March 28, 1724,[49] in which Wernicke's works and the Postel-Hunold-Wernicke feuds were briefly

[41] Leonhard Meister, *Ueber Bodmer, öffentlicher Lehrer der Sittenlehre und der Geschichte an der Kunstschule zu Zürich. Nebst Fragmente aus seinen Briefen.* Zürich, 1783. See Bodmer's letter to Meister dated May 5, 1720, p. 76.

[42] *Versuch einer Deutschen Uebersetzung von Samuel Butlers Hudibras, einem Satyrischen Gedichte wider die Schwermer und Independenten, zur Zeit Carls des Ersten,* Franckfurt und Leipzig, 1737.

[43] *Alexander Popens Duncias mit Historischen Noten und einem Schreiben des Uebersetzers an die Obotriten,* Zürich, 1747.

[44] See Introduction to the *Dunciade* "An meine Freunde die Obertriten" and his letter to Sulzer, September 12, 1747, in *Briefen der Schweizer Bodmer, Sulzer, Gessner. Aus Gleims lit. Nachlasse,* by W. Körte, p. 69, Zürich, 1804.

[45] See *Bodmer Denkschrift,* pp. 224–225.

[46] See *Euphorion,* Vol. 18, pp. 68–89, and Vol. 19, pp. 66–91.

[47] *Die ganze Ästhetik in einer Nuss, oder neologisches Wörterbuch,* Leipzig, 1754. See Lessing's Review in the *Berlinischen privil. Zeitung,* 98. Stück, vom 15. August, 1754.

[48] *Ankündigung einer Dunciade für die Deutschen. Nebst dem verbesserten Hermann,* Frankfurt und Leipzig, 1755. Gessner, Gleim, Sulzer and Ramler took an active interest in this work. See Körte, Loco citato, p. 228 ff., p. 234 ff., p. 245 ff.

[49] *Literarische Pamphlete aus der Schweiz,* p. 32 ff., Zürich, 1781.

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sketched. König paid a high tribute to Wernicke and saw in *Hans Sachs* a "Stachelschrift von solcher Schönheit, Stärke, spitziger, feiner und scherzhafter Lebendigkeit," which could be used in a literary controversy, and he himself planned to re-edit it and use it against Brockes and the Hamburg poets but his plan miscarried.[50] In the following year, as is seen from his letter[51] to Bodmer, dated April 30, 1725, König sent him a transcript of *Hans Sachs* as well as a copy of Hunold's *Des Thörichten Prietschmeisters.*

Although König introduced Wernicke to Bodmer, to Bodmer, however, belongs the credit of introducing him to Germany, and through his publications Wernicke became a renowned poet. Bodmer regarded him as the first German who criticized poetry frankly and independently according to firmly established principles.[52] The treatise on imagination,[53] published by Bodmer and

[50] See letter to Bodmer, June 27, 1726, which contains a list of the publications that were to appear in the Boberfeldischen Gesellschaft. No. 20 was "Hans Sachs, Heldengedicht mit Erklärungen der dunckeln Stellen und Nachricht von dem Autore und seinen Gegnern." Published by Brandl. *Brockes,* p. 148 ff.

[51] See letter published by Brandl in *Anglia,* Vol. I, p. 460 ff. König sent Bodmer a partial translation of "Paradise Lost" by Haake and "Das andre ist das Heldengedicht Hans Sachs, welches ich abschreiben lassen und unter welcher eigenhändig die Anmerkungen dazu gesezt, die wenigen bekannt wie mir, . . ."

[52] "Er urtheilte auf festgesetzte und beständige Grundsätze; welches vor ihm noch keiner gethan hatte. Er betrachtete die Gedichte der Deutschen ohne Vorurtheile, und sah auf die Wahrheit der Sache und nicht auf das Aussehen oder den Beifall anderer. Aufrichtigkeit und Freiheit, mit Bescheidenheit ohne Schmeichelei, führten ihm die Feder." See Nachricht von dem Ursprung der Kritik bei den Deutschen, in *Crit. Schriften,* I, Part 1, 103, 1741.

[53] *Von dem Einfluss und Gebrauch der Einbildungs-Kraft; zur Ausbesserung des Geschmackes.* . . . Frankfurt und Leipzig, 1727. Prior to this in the critical poems, *Charakter der Teutschen Gedichte* (1734), he lauds Wernicke's keen criticism

"Den scharfen Wernicke, der Wahr und Falsch nicht mengte,
Und seinen reinen Witz mit Unwitz nicht besprengte
Der das geschminkte Nichts in Waldaus Lied erkannt,
Und der's auch ohne Furcht ein buntes Nichts genannt. . . ."

I quote from "Kritischen Lobgedichten und Elegien," p. 40, Zürich, 1747.

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Breitinger in 1727, shows the influence of the rational criticism of Wernicke. In the introduction, Bodmer quotes from *Hans Sachs,* by way of illustration, to substantiate his contention that German poets do not base their criticism on reason and only incidentally criticize justly, "wie Hr. Warneck sich ausdrücket, aus Irrthum sich auf dem rechten Wege finden."[54] This results in romantic heroes in the tragedy, and clowns (Hans-Würste) in the comedy.

During his controversy with Gottsched, Bodmer edited and four times published *Hans Sachs* with commentaries:[55] in a satire against the Leipzig school he borrowed motives from it;[56] in his discussion of Wernicke in the treatise on the origin of German criticism he dealt with it and with *Dem Thörichten Prietschmeister;*[57] and in the discussion of the German theater he quoted from it.[58] In the preface and footnotes of the first edition (1741),

[54] Wernicke lines 25–26 are:

"Mein Stelpo ist's allein, der niemals nicht nachsinnt,
Und auch im rechten Weg', aus Irrthum sich nie findt."

[55] First time in *Sammlung Critischer, Poetischer, und anderer geistvoller Schriften, Zur Verbesserung des Urtheils und des Wizes in den Wercken der Wohlredenheit und der Poesie,* I, Part I, p. 44 ff., Zürich, Bey Conrad Orell und Comp, 1741.

Second time in his first complete edition of Wernicke, *N. Wernnikens, ehemaligen Königl. Dänischen Staatsraths, und Residenten in Paris, Poetische Versuche in Ueberschriften; Wie auch in Helden- und Schäfergedichten. Neue und verbesserte Auflage.* P. 115 ff. Zürich, bey David Gessner, Gebrüdere, 1749.

Third time in *Sammlung der Zürcherischen Streitschriften zur Verbesserung des Deutschen Geschmackes, wider die Gottschedische Schule, von 1741 bis 1744. Vollständig in XII. Stücken.* Neue Ausgabe. II, part I, Zürich, Bey Conrad Orell und Comp., 1753.

Fourth time, reprint of the 1749 edition, 1763.

[56] "Das Complot der herrschenden Poeten," in *Crit. Schriften,* part 3, 1742.

[57] "Nachricht von dem Ursprung der Kritik bei den Deutschen." In *Crit. Schriften I,* Part 1, pp. 83–180, 1741.

[58] *Critische Betrachtungen und freye Untersuchungen zum Aufnehmen und Verbesserung der deutschen Schau-Bühne, mit einer Zuschrift an die Frau Neuberin.* Bern, 1743. Bodmer attributes the popularity of Gottsched's play to the actors who performed them, just as Wernicke at-

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Bodmer sets forth his reasons for bringing *Hans Sachs* to light again. He esteems this satire for its literary qualities, and not because it is a controversial pamphlet (Zeitungsblatt). The many witty jests, the instructive raillery, the manner of expression, the ideas, and pictures (Gemälde) it contains per se appeal to him. Then, too, he believes there are still many fools among the poets of his own time who might profit by reading such a satire.[59]

That he regarded Gottsched a "Stelpo," is evident from lines 39–40.

> "Schoch, Zeidler, Zes' und Titz, und andre Reim-Erfinder
> Sind, wann man sie mit dir vergleicht, nur arme Sünder."[60]

Bodmer again in 1753 directly connects Gottsched and his school with *Hans Sachs,* as is evident from the collection of treatises published under the title: *Zürcherischen Streitschriften—wider die Gottschedische Schule. Hans Sachs* is published in this collection. The four editions by Bodmer bespeak the wide circulation which this satire enjoyed during the time when the Swiss-Leipzig controversy was in progress.

The year following the publication of the first edition of *Hans Sachs,* Bodmer published a prose satire, *Das Complot der herrschenden Poeten* against the Leipzig school of poets. Motives for this were taken from *Hans Sachs* and the *Dunciad.* Bodmer compares himself to Wernicke in the passage which he uses to prove that the Gottsched school will be unsuccessful in the endeavor to shelve his own works. "Wernicke hatte in schweren Tagen und unter einer Welt voll Pfuscher die Rechte der gött-

tributed the renown of Postel's plays to the actors and singers. In a footnote (p. 51) he cites sixteen lines from *Hans Sachs* (lines 58–64).

[59] "Er (the editor) zweifelt nicht, dass man nicht auf den heutigen Tag noch eine zimliche Anzahl solcher Stelpo antreffen werde, welche den ersten Stelpo nicht verleugnen können." See Bodmer's introduction to the first edition.

[60] In a note to Schoch in the first edition, Bodmer says: "Hr. Gottsched leget diesem in dem Hauptstüke seiner "Dichtkunst für die Deutschen," wo er von den Hirtenliedern handelt, ein grosses Lob bei, und meint er habe in seinem Blumengarten viel Ehre eingeleget . . . Allein die Strophen die er zur Probe anführet, und vor ungemein ausgiebt, bekräftigen vielmehr das Urteil unsers Satyrici."

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lichen Chritik heraus gebracht und verfochten, aber ward zur Strafe in die unterirdischen Gewölber des hamburgischen Doms zu Spirings (Postel's printer) Makulatur geworfen . . . ."[61] Instead of making a dead poet the hero Bodmer substitutes "den herrrschenden Geschmack" (Gottsched's taste). His hundred sons (Wernicke's countless sons) form a conspiracy against the Swiss school, "each of whom was a poet king, each was powerful enough to rule the monarchy of his father." They make speeches similar to the monologues in *Hans Sachs* in which they quote and parody their own works; they are attended not only by their disappointed publishers but by printers, journalists, and all connected with publishing. Their sire king appeared to them as a spirit (blue vapor) which assumed the form of a throne occupied by the king transformed into human shape. Like Flecknoe, he was ridiculously large and wore a mantel but a fool's mantel. Majesty enveloped him as he sat upon the throne, the antichrist (Dryden's foe) of wit. The sons swear allegiance to the taste in their own works not by *Loves Kingdom* (a play of Shadwell) but by "Stelpo," etc., and vow to be loyal despite proof, reason, and the ridicule of satires. The blessing pronounced upon them by the sire king also contains the extent of the realm, "von Pommern bis in Schwaben, von Crayon bis in Westphalan." "Und sich von Schweitzerland erstrecke biss in Schwaben" (*H. S.*, l. 173).[62] Finally at the conclusion of his speech the king disappears, and his spirit in the form of a cloud settles upon each of his sons as a portion of his art and purifies their minds of reason. Like Dryden and Wernicke, Bodmer criticizes the poets and the poetry of his time in his satire.

c. Ramler's Connection with Hans Sachs

After Bodmer, Karl Wilhelm Ramler (1725–1798) was the only author who edited *Hans Sachs* in the eighteenth century. His edition contains merely the first sixty-nine lines of Wernicke's satire, and is only incidentally included in the book of epigrams

[61] Loco citato, p. 163.
[62] Bodmer, Loco citato, p. 217.

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(among which were many of Wernicke's) edited in 1780.[63] Like Lessing, Ramler had a great fondness for the epigram, and together they had edited the epigrams of Logau (1759). Several times before undertaking this edition,[64] in which he was encouraged by Lessing,[65] he alludes to Wernicke in his criticism.

Lessing wrote polemics which are unquestionably the most representative of the direct personal criticism. He usually contended for a principle, attacking the opponent and pointing out the fallacy of the principles advocated by him. At times he holds his opponent up to ridicule, as for instance Gottsched in the seventeenth *Literaturbrief,* or Klotz in the *Antiquarischen Briefen* (1768–1769). Of the latter the fifty-first to the fifty-seventh are entirely personal and in the fifty-fourth he quotes from Wernicke.[66] The quotation is from Wernicke's most scathing epigram, "An den Deutschen Moevius," directed against Hunold, which in spirit and even in motives is akin to Dryden's most poignant array of Shadwell in the second part of *Absolom and Achitophel.* Lessing's familiarity with Dryden and Wernicke and his keen appreciation of their wit make it probable that he knew both *Mac Flecknoe* and *Hans Sachs,* but as he only planned to write a burlesque epic[67] without really writing a satire, he neither quotes nor cites them; but after his combat with them, Gottsched, Klotz, and even Goeze, were fit candidates for the throne of Mac Flecknoe or Stelpo.

d. Criticism of Mac Flecknoe and Hans Sachs by Other German Critics

Mac Flecknoe and *Hans Sachs* are frequently referred to

[63] *Christian Wernickens Ueberschriften. Nebst Opitzens, Tscherings, Andreas Gryphius and Adam Olearius epigrammatischen Gedichten.* Leipzig, 1780.

[64] *D. N. L.* 39, p. 523.

[65] See letters of Lessing to Ramler in 1779.

[66] "Mein wehrterster Herr, ein andres ist es einem Weihrauch streuen, und ein andres, einem, mit Wernicke zu reden, das Rauchfass um den Kopf zu schmeiszen. . . . Ich will glauben, dass es blosz ihre Ungeschicklichkeit in Schwenkung des Rauchfasses ist: aber ich habe dem ohngeachtet die Beulen, und fühle sie." See *Lessings Werke,* D. N. L., XIX, p. 241.

[67] See *Pub. of the Mod. Lang. Assn.,* p. 579 (1909).

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throughout the latter half of the eighteenth century by German critics aside from Bodmer and Ramler. *Die Britische Bibliothek* (1758)[68] says that the laughing satire is more biting than the serious, and that to the former kind Dryden has a just claim, as his *Mac Flecknoe* crowns him with eternal laurels.

Schmid in his *Theorie der Poesie*[69] (1767) emphasizes the personal element in Dryden's satires, which he illustrates by saying that *Mac Flecknoe* was written against the wretched rhymer who became his successor as poet laureate.

Gerstenberg directly compares Klotz with *Mac Flecknoe* in a review of the Lessing-Klotz controversy concerning *Laokoon* (1769).[70] "Klotz der den Verstand der meisten Dingen so sonderbar, wie mit Versatz verfehlet, dasz er gleich jenem Mac Flecknoe beym Dryden, ein Gelübde gethan zu haben scheint

"Ne'er to have truce with sense."

In his *Geschichte der komischen Literatur,*[71] Flögel sketches the life and satirical works of Dryden and attaches considerable importance to *Mac Flecknoe,* giving the circumstances of its origin and translating in prose lines 15 to 20, to which he adds: "Dieses ist einer der besten und scharfsten Satiren im Englischen." By way of illustration he quotes the characterization of Shadwell:

"In prose and verse, was owned without dispute
Through all the realm of nonsense absolute."

He states, however, that he is too cruel to Shadwell and oversteps the bounds of truth. The chief motives of the satire are then analyzed, and in his discussion of Wernicke he also gives Dryden as the source for *Hans Sachs.*

Herder admired Dryden as a lyricist, as we shall see later, but was not favorably inclined to the satire. His criticism of Wernicke is for the most part negative, but he mentions *Hans Sachs* in the *Adrastea* (1801),[72] as the "Heldengedicht, das er gegen den

[68] In connection with the life of the Duke of Buckingham, p. 396.
[69] Chr. Schmid, *Theorie der Poesie,* p. 228, Berlin, 1767.
[70] In the *Hamburgischen Neuen Zeitung,* Aug. 7, 1769.
[71] Carl F. Flögel, *Geschichte der komischen Literatur,* II, pp. 363–368.
[72] *Herders Werke,* Düntzer, vol. 14, p. 735 ff.

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damals blühenden Postel machte." While he asserts that "Nation- und Zeitmäszig folgt daraus wenig," yet he praises Wernicke by saying his depictions are so true that page after page would apply equally well to Germany in 1801 as in 1700, and concludes by imploring the spirits and critics: "thut Eure Kräfte, Eure Launen zusammen, um uns den Lohenstein und Hoffmannswaldau, den neuen Postel und Stoppo aus den Gliedern zu treiben"!

2. Other Satires of Dryden in Germany

While *Mac Flecknoe* left a deep impression upon German criticism, the other satires of Dryden did not appear prominently and seem to have exerted but little influence. *Absolom and Achitophel, The Medal,* and *The Hind and the Panther* are incidentally discussed by critics. Of these *Absolom and Achitophel* plays the most prominent role, due to the famous character sketch of Zimri (Buckingham), which the author himself regarded a model. A part of the Zimri sketch appeared in *The Spectator* (Nos. 163 and 222), translated by Mrs. Gottsched; the whole Zimri sketch is translated in prose in the *Britischen Bibliothek,*[73] accompanied with the remark that it fits the Duke's character. The review of Hume's *History of Great Britain,* also in the *Britischen Bibliothek,* lauds the great talent of Dryden, but regrets that in common with other poets he produced so much that was crude, coarse, and smutty, but concludes: "Doch unter der grossen Anzahl unwürdigen Geburten, entdecken einige kleine Stücke, und der grösste Theil seines Absolom und Achitophel so viel Genie, einen solchen Reichtum des Ausdrucks . . . ."[74] Flögel believes *The Rehearsal* to be a better satire than *Absolom and Achitophel,* however, he pronounces the latter "Eine beissende Satire."[75] Blankenburg briefly describes it and calls attention to its popularity by citing the two translations made soon after its appearance,[76] while Bouterwek designates it the most artistic poem of Dryden.[77]

[73] Loco citato, p. 86, 1758.

[74] Ibid., p. 622, 1757.

[75] Loco citato, II, p. 263.

[76] Friedrich von Blankenburg, *Litterarische Zusätze zu Johann Georg Sulzers algemeiner Theorie der schönen Künste,* III, p. 57*, Leipzig, 1796.

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Flögel and Blankenburg both include *The Medal* in their discussion of Dryden's satires. The former translates in part the prefaced epistle to the Whigs, where Dryden tells them: "Rail at me abundantly, and not to break a custom, do it without wit."[78]

Schmid regards *The Hind and the Panther* a personal satire,[79] directed against the Whigs; and Flögel analyzes and discusses it. Bouterwek ranks it above *Religio Laici* poetically, but thinks it is so long that it becomes monotonous and is overburdened with unpoetic historical references to the church and the politics of England.[80]

3. "Essay on the Origin and Progress of the Satire"

The criticism of Germany was not only influenced by the satires of Dryden, but also by the history and theory of the satire which he presented in his treatise *On the Origin and Progress of the Satire* (1693). This discourse contained a history of the satire from the beginning; an exhaustive comparison of the satirists Horace, Juvenal, and Persius, and his own theory as to the manner of writing a satire.

Dryden's treatise on the satire found its way into Germany shortly after Lessing's publication of his translation of Dryden's *Essay on Dramatic Poesie.* In 1762 it was translated and published by Nicolai, Lessing's co-worker, in his *Vermischten Schriften* which, as we shall see later, also contained Warton's *Essay on the Writings and Genius of Pope,* and the translations of some of the best English and French critical works. The translation was most probably undertaken at Lessing's suggestion, as Nicolai cooperated with him. It does not include the general and personal matter in the beginning, and wisely omits the unessential parenthetical phrases thrown in for illustration, as for instance, "like my friend, 'The Plain Dealer.'" Nicolai's translation does not lack in clearness for the German reader, but his style lacks the

[77] Friedrich Bouterwek, *Geschichte der Künste und Wissenschaften,* Vol VIII, p. 48 ff. Göttingen, 1810.

[78] Loco Citato, II, p. 364.

[79] Ibid., p. 365.

[80] Loco citato, VIII, p. 49.

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finish which is so characteristic of the prose of Dryden and Lessing.

The esteem in which other critics held Nicolai at this time, is reflected by their familiarity with the Nicolai translation. Schmid opens his chapter on the satire with: "Cesabanus und Dryden haben die gründlichsten Untersuchungen über den Ursprung und die Alterthümer der Satyre gemacht," then cites Nicolai's translation.[81] In dealing with Dorset as a satirist, he quotes Dryden: "Graf Dorset hat nach Drydens Urtheil die Kunst der feineren Spötterei verstanden."[82] Flögel regards Dryden's treatise on the Greek and Roman satire an authority: "Sie ist mit Geschmack und Gründlichkeit abgefasst."[83] Blankenburg is even more emphatic in his commendation. After outlining the satire, he directs the reader to Dryden as the one authority: "Wer mit einer ausführlichen Untersuchung hierübergedient seyn mag, den verweisen wir auf Drydens Abhandlung von dem Ursprung und Fortgang der Satire."[84]

Although less emphatic in his commendation, Bouterwek regards it an exhaustive treatment: "Besonders lesenswerth ist seine (Dryden's) ausfürliche Zueignung oder eigentliche Abhandlung über die didaktische Satyre."[85]

CHAPTER II. Essay on Dramatic Poesie (1668)

1. Early Noted by German Critics

Aside from his satires, Dryden's *Essay on Dramatic Poesie* exerted a greater influence upon Germany than any of his other critical works. While the translation and Bodmer's revival of *Mac Flecknoe* preceded the translation of the *Essay*, the latter preceded the translation of the treatise *On the Origin and Prog-*

[81] Loco citato, p. 235.

[82] Ibid., p. 238.

[83] Loco citato, I, p. 278. Throughout the work he quotes Dryden, I., 175, 278; II, 4, 7, 20, 354 ff., 364–371, 384; III, 464; IV, 83, 90, 217, 300.

[84] Loco citato, IV, p. 129.

[85] Loco citato, VIII, p. 55.

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ress of the Satire, and was the first work of Dryden noted by German critics. Morhof, in his *Unterricht der deutschen Sprache und Poesie*[1] (1684), discusses and in a chapter on English poetry analyzes it at some length. One of the interesting features of his discussion is that of the four authors dealt with in the *Essay,* Shakspere, Fletcher, Beaumont, and Jonson. He says that he has read nothing of Shakspere and Fletcher, and limits his analysis to Jonson. While he concedes, "Dryden hat gar wohl gelehrt von der Dramatica Poesi geschrieben," he regards his claim that the present English writers are superior to all moderns, as too presumptious. In his "Polyhistor"[2] (1688–1692), Morhof also twice mentions the *Essay,* and like most German critics in the eighteenth century, speaks of the author as the "celebrated Dryden."

Jöcher's *Gelehrte Lexicon* (1715)[3] characterizes Dryden as "einer von den vortrefflichsten Poeten und Comödien-Schreibern in Engelland, welcher sonderlich sehr viele Schauspiele, auch einen gelehrten Tractat von Dramatik Poesy geschrieben."

As early as 1730 Gottsched quotes from the *Essay* Dryden's definition of humor: "The ridiculous Extravagance of Conversation, wherein one Men differs from all others."[4] Like Morhof, he accuses Dryden of presumption in the claim that the English surpass all moderns in the use of humor. He regards Jonson the authority on the rules for the English stage, but adds: "darin Dryden auch viel Wercks macht." He knew the *Essay* only through the French translation of the *Spectator,* for his knowledge of English was so limited that he could not even quote accurately, as is evident from the English passages in the *Critischen Dichtkunst.*

[1] See the second edition, p. 226 ff., Lübeck und Frankfurt, 1702.

[2] See fourth edition, I, p. 763 and 1013, Lubecae, 1747.

[3] See the third edition, p. 940, Leipzig, 1733.

[4] *Versuch einer critischen Dichtkunst vor die Deutschen,* p. 639, Leipzig, 1730.

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2. Its Relation to Lessing and his Seventeenth *Literaturbrief*

Prior to Lessing's connection with the *Essay,* however, the significance of its relation to Germany was inconsequential. The close relation of the *Essay* to Lessing, especially to the utterances in the seventeenth *Literaturbrief,* has not been adequately treated. Erich Schmidt only vaguely suggests the relation by adding to the sketch of the *Essay,* the single sentence: "Ein Jahr später schrieb Lessing den siebzehnten Literaturbrief."[5] Karl Borinski asserts, that it is quite evident that Dryden is Lessing's guide in the English theater, but does not specify the connection between the *Essay* and the *Literaturbrief.*[6] Meisnest directly connects the *Essay* with Lessing's utterances on Shakspere in the *Literaturbrief,* but he did not use the internal evidence to reach his conclusion, and his argument in favor of Nicolai's influence is based on a wrong date.[7]

Before presenting the evidence of relationship between the two, a sketch of Lessing's early acquaintance with Dryden through Voltaire, and Gottsched's later connection with the *Essay,* are necessary for the understanding and the partial justification of the attack upon Gottsched in the *Literaturbrief.* As Erich Schmidt has shown, Lessing was introduced to Shakspere through Voltaire's *Lettres sur les Anglais* (1732).[8] Similarly it may be said that Lessing was also introduced to Dryden through Voltaire's *Lettres,* for the characterization of Shakspere as a tragedian, and the quotation of "to be or not to be" from *Hamlet* are directly followed in the same *Lettre* with a characterization of Dryden, and the quotation of the well known lines from *Aureng-Zebe:* "When I consider life, 'tis all a cheat." While not altogether

[5] *Lessing, Geschichte seines Lebens und seiner Werke,* I, p. 376, Berlin, 1884.

[6] *Lessing,* I, p. 111, Berlin, 1900.

[7] Lessing and Shakspere, *Publication of the Modern Language Association,* XIX, p. 234 ff. (1904). Meisnest dates the review made by Nicolai of the *Neuen Probestücke der englischen Schaubühne* (*Bibliothek der schönen Wissenschaften,* VI, Stück 1, pp. 60–74), 1758, while it was not published until 1760, one year after the publication of the *Literaturbrief.*

[8] Loco citato, I, p. 166.

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favorable to Dryden, Voltaire's criticism proclaims him an "Auteur plus fécond que judicieux, qui auroit une reputation sans mêlange, s'il n'avoit fait qui la dixémi partie de ses ouvrages."

The *Lettres* of Voltaire, which discussed among other topics English tragedy and comedy, did much toward inspiring Lessing to take up the cause of the English drama and Dryden, just as the *Spectator* had first called the attention of Bodmer to Milton and his epic, *Paradise Lost*. The *Beyträge zur Historie und Aufnahme des Theaters* (1750), edited jointly by Lessing and Mylius, contains a translation of Voltaire's *Lettres*. Lessing, however, planned the work, wrote the introduction, and contributed most of the articles.[9] In the introduction of the *Beyträge* he says that one purpose of the work will be to translate ancient plays, then modern dramas little known in Germany, especially English and Spanish. He then enumerates a number of dramatists, and among the English commends Shakspere, Dryden, Wicherly, Vanbrugh, Cibber, and Congreve. "Diese sind alle Männer," he says, "die zwar eben so grosze Fehler als Schönheiten haben, von denen aber ein vernünftiger Nachahmer sich sehr vieles zu Nutze machen kann." Lessing has enumerated here only the dramatists which Voltaire has discussed in the *Lettres,* and the faults and beauties, which he ascribes to them, are evidently a reflection of Voltaire's criticism.

Even though Lessing at this time still regarded Gottsched as the authority on the German stage, the introduction to the *Beyträge* shows that he is no longer fully in accord with Gottsched's idea of the German theater and that he has greater faith in the English drama as a model for the Germans. He regrets that only the French have been taken as a model, and continues: "Dadurch hat man aber unser Theater zu einer Einförmigkeit gebracht, die man sich auf alle mögliche Art zu vermeiden sich hätte bestreben sollen." He is more emphatic in his views in favor of the English, when he enumerates the list of English dramatists. "Shakspere, Dryden,—sind Dichter, die man bey uns fast nur dem Namen nach kennet, und gleichwohl verdienen sie unsere Hoch-

[9] See foreword to the *Theatralischen Bibliothek* (Berlin, 1754), in *Lessings Werke,* V, p. 10, edited by Boxberger.

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achtung, sowohl als die gepriesenen französischen Dichter." Still more emphatic, and seemingly prophetic of the future course of the German stage, is the next utterance: "Das ist gewisz, wollte der Deutsche in der dramatischen Poesie seinem eigenen Naturelle folgen, so würde unsre Schaubühne mehr der englischen als französischen gleichen."

Lessing's utterances in the introduction of the *Beyträge* could hardly have escaped the notice of Gottsched, as he had but recently suffered defeat at the hands of the Swiss School of poets, when in 1748 the first cantos of Klopstock's *Messias* appeared. Translations of English plays were beginning to spring up here and there, and Gottsched's followers were daily deserting him. These translations were made a part of the repertoire of the German theatrical troops. At Leipzig, for instance, where Gottsched had enjoyed the dictatorship of the stage, Koch and his troop of players in 1752 successfully performed Weisse's translation of *The Devil to Pay* by Coffey. Gottsched harshly attacked not only this opera, but all English plays, and translators and performers of the translations, maintaining that they defiled the taste (Geschmack) of the German theater.[10] This harsh criticism gave rise to a scandal in which many "Streitschriften" passed between Gottsched and his followers and their opponents.[11] Lessing followed this controversy with interest, as is evident from the review in the *Berlinischen privilegierten Zeitung*.[12] While assuming to take a non-partisan role, he defends *Den Teufel ist Los* in its essentials, and reiterates his claim made in the *Beyträge* by saying: "dasz es vielleicht nicht allzu wohl gethan sei, wenn wir unsre Bühne, die noch in der Bildung ist, auf das Einfache des französichen Geschmacks einschränken wollen." He robs Gottsched of the argument, that the English plays violate the rules of the drama, by simply granting that no English play is regular.

In 1752 (Bocage's) *Lettres sur le theatre Anglais*,[13] containing

[10] *Das Neuste aus der anmuthigen Gelehrsamkeit*, III, p. 128, 1753.

[11] Gustav Waniek, *Gottsched und die deutsche Litteratur seiner Zeit*, p. 619 ff., Leipzig, 1897. Cf. also J. Minor, *Christian Felix Weisse und seine Beziehung zur deutschen Literatur*, pp. 130–157.

[12] Dated July 21, 1753. Cf. *Lessings Werke*, IV, p. 175, in D. N .L.

[13] Two volumes, published in Paris.

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a partial translation of Dryden's *Essay,* was published. In order to regain his lost prestige, Gottsched eagerly seized the opportunity afforded by the *Lettres* to introduce Dryden, an English authority, supporting his contention, that the French drama was superior to the English. The *Essay* contains two main propositions for consideration: first, the relative merits of the ancient and modern theater; and second, the relative merits of the French and English dramatists. Four friends debate these two propositions. Crites takes up the issue with Eugenius, and defends the ancients; while Lisidieus takes issue against Neander, and defends the French. Dryden specifically states in the preface that Neander is his spokesman.[14] Now Bocage, and then Gottsched from him, translate the speech of Lisidieus, who argued the cause of the French to prove Dryden an authority favoring the French drama.

Lessing was still partly adhering to Gottsched at the time the latter published his partial translation of the *Essay* of Dryden. His too numerous plans, and his diversified interests prevented him from carrying out the program mapped out in the *Beyträgen* in his new journal, the *Theatralischen Bibliothek,*[15] founded in 1754. But Gottsched's manner of introducing Dryden to prove his own theories, no doubt induced Lessing to turn to Dryden and the *Essay,* when he became convinced that the repudiation of Gottsched was necessary. That he devoted himself to the study of Dryden before the publication of the translation of the *Essay* in 1758[16] is proven by the letter to Mendelssohn in 1756 in which he says: "Bitten Sie doch den Hrn. Nicolai in meinem Namen mir mit ehestem denjenigen Theil von Cibbers Lebensbeschreibungen der englischen Dichter zu schicken, in welchem Drydens Leben steht. Ich brauche ihn."[17]

[14] "The drift of the ensuing discourse was chiefly to vindicate the honor of the English writers from the censure of those who unjustly prefer the French before them."

[15] *Lessings Werke,* V, D. N. L., Chap. XIII, contains: Von Johann Dryden und dessen dramatischen Werken.

[16] According to a review in the *Berlinischen priv. Zeitung,* 1759, May 22, it was not published until 1759.

[17] *Mendelssohns Schriften,* V, p. 69, Leipzig, 1756. Cibber's life re-

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In the translation of the *Essay* Lessing omits some of the less essential parts, but translates the portion containing the arguments as to whether the French, or the English drama is superior. His translation interprets the English spirit, and like Dryden, he writes an excellent prose, such as none of his predecessors wrote; while Gottsched wrote a less lucid style, and interpreted Dryden solely through French-colored glasses.

The significance of Lessing's translation has not been pointed out by any of his critics. Besides the overthrow of Gottsched's claim, that Dryden preferred the French drama to the English, it directly influenced Lessing in the convictions expressed in the seventeenth *Literaturbrief*, and introduced into Germany one of the best extant English criticisms of the English theater. The immediate occasion for the *Literaturbrief* was a review by Nicolai in which he asserts: "Niemand wird läugnen, dasz die deutsche Schaubühne einen groszen Theil ihrer ersten Verbesserungen dem Herrn Prof. Gottsched zu danken habe . . . ."[18] Lessing took advantage of the opportunity offered by this review, to make a vehement attack upon Gottsched and Voltaire, allegiance to whom he now completely renounces.

Evidences of close relationship between Dryden's *Essay* and the seventeenth *Literaturbrief* are: date; identical arguments in favor of English dramatic supremacy; enumeration of the same English dramatists; proclamation of Shakspere's genius; emphasis of Corneille's weakness; and the compliance of the scene from Lessing's *Faust* quoted in the *Literaturbrief* with the theories set up by Dryden in the *Essay*. The connection between the date of the two is striking, as the number of the *Theatralischen Bibliothek* containing the translation of the *Essay* was published either at the close of 1758 or early in 1759, while the *Literaturbrief* is dated February 16, 1759. The close succession of the two is significant. Lessing wrote the *Literaturbrief* when his translation of the *Essay* was either in the press,

ferred to is "Mr. (Theophelus) Cibber, *The Lives of the Poets of Great Britain and Ireland*, London, 1753. Dryden's life is in Vol. 3, p. 85 ff.

[18] *Bibliothek der schönen Wissenschaften und der freyen Künste*, III, p. 85, 1758.

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or had just come from the press. It becomes doubly significant, when we consider that Dryden's theme in the *Essay,* and Lessing's in the *Literaturbrief* are identical, namely, to prove the superiority of the English theater over that of the French. Whether this relation of time and theme be conscious or unconscious on the part of Lessing is immaterial in proving Dryden's influence upon Lessing.

Dryden's first argument for the superiority of the English drama is that it has a greater variety of plot and action than the French. Through his spokesman, Neander, he concedes that the French contrive their plots more regularly, and observe the decorum of the stage, and the unities with more exactness, but is of the opinion, that neither the faults of the English, nor the virtues of the French are considerable enough to deny the superiority of his countrymen in the drama. He maintains that many more "accidents" can naturally happen if two or three days are allowed for the maturity of the design, than could happen with any probability in the compass of twenty-four hours. Especially is this true of the tragedy in which the design is greater. The servile observation of the unity of place often forces absurdities upon the French poets and prevents the change of scene, and the too strict observance of the unities of time and place limits the action. "If we are to be blamed for showing too much of the action," he adds, "the French are as faulty for showing too little of it"; and in characterizing Shakspere he says: "When he describes anything you more than see it, you feel it too."

Lessing recognizes the similar tastes of the English and the Germans in the drama, and in a passage in the *Literaturbrief* almost parallel to the one used by Dryden, he calls attention to the inclination of the Germans for a larger scope of action and greater profoundness in the tragedy than the French possess. "Er (Gottsched) hätte aus unsern alten dramatischen Stücken, welche er vertrieb, hinlänglich abmerken können, dass wir mehr in den Geschmack der Engländer als der Franzosen einschlagen; dass wir in unsern Trauerspielen mehr sehen und denken wollen, als uns das furchtsame französische Trauerspiel zu sehen und zu denken gibt . . . ."

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As an other argument for English superiority in the theater, Dryden claims greater and more numerous characters, and greater passions for the English drama with its complicated plots. He takes exception to the French custom of making only one person considerable in a play. Instead he would have several "shining characters," some almost equal to the first, so that greatness may be opposed to greatness, and all the persons made considerable not only by their quality, but also by their action. In defense of his claims he refers to Shakspere and Fletcher: "We endeavor to follow the variety and greatness of characters which are derived to us from Shakspere and Fletcher"; and, "Shakspere is always great, when some great occasion is presented to him."

Likewise Lessing maintains in the *Literaturbrief,* that Gottsched should have perceived "dass das Grosse, das Melancholische besser auf uns wirkt als das Artige, das Verliebte . . . ."

To the accusation of the French that the English show too much tumult on the stage, Dryden replied: "Whether custom has so insinuated itself into our countrymen, or nature has so formed them to fierceness I know not; but they will scarcely permit combats and other objects of horror to be taken from them"; and, "I dare boldly affirm that in most of the irregular plays of Shakspere and Fletcher there is more masculine fancy, and more spirit of writing, than there is in any of the French."

The Germans, according to Lessing, are by nature more virile than the French. "Gottsched hätte aus unsern alten dramatischen Stücken, welche er vertrieb, hinlänglich abmerken können, dass—das Schreckliche—besser auf uns wirkt, als—das Zärtliche."

Further Dryden argues that by pursuing a single theme the French lose the advantage of expressing and of arousing the passions. "I confess," he continues, "their verses are to me the coldest I have ever read. Neither indeed is it possible for them in the way they take so to express passion that the effects of it should appear in the concernment of the audience.—Their speeches are so many declamations which tire us with their length. We are concerned as we are in tedious visits of bad company, and are in pain until they are gone."

Lessing also contends that the German taste does not run in the

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direction of the too simple, and that Gottsched should have observed, "dass die zu grosse Einfalt uns mehr ermüde, als die zu grosse Verwicklung." Then he concludes his general arguments in favor of the English theater, which are identical with those of Dryden in the *Essay,* with the remark: "Er (Gottsched) hätte also auf dieser Spur bleiben sollen, und sie würde ihn geraden Weges auf das englische Theater geführet haben."

The same English dramatists are also grouped together by Dryden and Lessing. The request of Eugenius that Neander, the spokesman for Dryden, give a character sketch of Jonson and tell his opinion frankly whether all writers, both French and English, should give place to him, was granted; but in granting the request Neander reserved the right of also characterizing Jonson's rivals in poetry, Shakspere, Beaumont, and Fletcher. These four English dramatists are given the first rank by Neander, and are the only ones he dwells upon at length in the *Essay.*

Singularly Lessing enumerates just these four, when he accused Gottsched of giving the first rank to Addison's *Cato.* "Denn eben dieses, dass er den Addisonschen Cato für das beste englische Trauerspiel hält, zeiget deutlich, dasz er hier nur mit den Augen der Franzosen gesehen und damals keinen Shakspere, keinen Jonson, und keinen Beaumont und Fletcher u. s. w. gekannt hat . . . ."[19] On the surface this may simply be ascribed to commonly accepted knowledge, but Lessing's criticism is usually based on careful investigation of the source, or upon the conclusions of a recognized authority. At best his first-hand knowledge of English dramatists at this time was still rather limited. Then it is not to be forgotten that before he and Voltaire were estranged, he commended Shakspere, Dryden, Wicherly, Vanbrugh, Cibber, and Congreve after reading the *Lettres,* which discussed these same dramatists; and now after translating the *Essay,* he commends Shakspere, Jonson, Beaumont, and Fletcher.

Four times he groups them thus: twice in the explanatory links in the translation of the *Essay;* once in the "Geschichte der

[19] Immediately following the characterization of Dryden, Voltaire in his *Lettres* places Addison and his *Cato* above Shakspere and all other English dramatists.

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deutschen Schaubühne," published in the same number of the *Bibliothek* with the *Essay;* and again in the *Literaturbrief,* as already mentioned. Lessing's first grouping in the *Essay* is in his explanation of the "last age" used by Crites. "Er versteht unter diesem letztvergangenen Weltalter die kurz vor dem bürgerlichen Kriege vorhergegangenen Jahre, die Regierung der Königin Elisabeth und Jakobs I., unter welcher Shakespeare, Johnson und andere grosze Genies lebten." The second grouping is in connection with the dialogue of Eugenius and Neander, where the former interrupts the latter in the examination of the *Silent Women* to beg for the sketch of Shakspere, Jonson, Beaumont, and Fletcher. This Lessing condenses as follows: "Ehe es hierzu kömmt, ersuchet Eugenius den Neander, den Charakter ihrer vier vornehmsten dramatischen Dichter zu entwerfen, welches er in folgenden thut."

The passage in the *Geschichte der deutschen Schaubühne* runs: "Shakspere, Beaumont, Fletcher und Ben Johnson waren die groszen Genies, die es [das vorige Jahrhundert] mit unsterblichen Werken bereicherten und es auf einmal zu einem Theater machten, welches nach dem griechischen für einen Kenner der schönen Wissenschaften das allerinteressanteste ist und dem Anschein nach auch bleiben wird."[20]

Furthermore Dryden and Lessing in common emphasize the weakness of Corneille. Measuring him by the definition of a play laid down in the *Essay* ("a just and lively imitation of nature, representing its passions and humors"), Dryden finds many weaknesses in Corneille, the "arch-dramatist" of the French. He grants that his plays are regular, but adds: "What is more easy than to write a regular French play, or is more difficult than to write an irregular English one, like those of Fletcher, or of Shakspere"? He regards the plots of Corneille as "flat designs," and compares them with "ill riddles" found out ere they are half proposed. To him Corneille's best comedy, *The Liar,* lacks humor, and does not compare favorably with many comedies of Fletcher and Jonson. Corneille's tragedies do not move the passions, according to Dryden, on account of their long tedious speeches.

[20] *Lessings Werke,* V, p. 351.

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"Look upon the *Cinna* and the *Pompey;* they are not so properly to be called plays, as long discourses of reason of state; and *Polieucte* in matters of religion is as solemn as the long stops upon our organs." Even his most popular play, *Andromede,* Dryden finds teeming with improbabilities.

As compared with the English, especially Shakspere, Lessing also claims that Corneille lacks in the essentials of tragedy, in power over the passions, and in wit; but concedes that he observes the rules of the ancients. In the language of the *Literaturbrief*: "Auch nach den Mustern der Alten die Sache zu entscheiden, ist Shakspere ein weit gröszerer tragischer Dichter als Corneille, obgleich dieser die Alten sehr wohl und jener fast gar nicht gekannt hat. Corneille kömmt ihnen in der mechanischen Einrichtung und Shakspere in dem Wesentlichen näher. Der Engländer erreicht den Zweck der Tragödie fast immer, so sonderbare und ihm eigne Wege er auch wählet, und der Franzose erreicht ihn fast niemals, ob er gleich die gebahnten Wege der Alten betritt. Nach dem 'Oedipus' des Sophokles muss in der Welt kein Stück mehr Gewalt über unsere Leidenschaften haben als 'Othello,' als 'König Lear,' als 'Hamlet' u. s. w. Hat Corneille ein einziges Trauerspiel, das Sie nur halb so gerühret hätte als die 'Zaire' des Voltaire? Und die 'Zaire' des Voltaire, wie weit ist sie unter dem 'Mohren von Venedig'?"

Both Dryden and Lessing proclaim Shakspere a genius. At the time Dryden wrote the *Essay,* the idea of genius had not been formulated, but already he had ventured to place Shakspere above Jonson[21] and all English poets. In the *Dedication to the Rival Ladies,* published four years before the *Essay,* he attributes to him "a larger soul of poesy than any of our nation";[22] and in the *Essay* itself, comparing him with Jonson he says: "Shakspere, the Homer or father of our dramatic poets, is the greater wit." With some reserve he places him above the ancient poets. "He was the man who of all modern, and perhaps ancient poets, had the largest and most comprehensive soul." Later Dryden formu-

[21] Malone, *Critical and Miscellaneous Prose Works of John Dryden,* I, part 1, p. 61, London, 1800.

[22] Scott-Saintsbury, II, p. 136.

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lated the idea that genius is superior to any rule. This declaration is coupled with Shakspere in a letter to Dennis (1693): "He had a genius for tragedy and we know that genius alone is a greater virtue than all other qualifications put together."[23] Although he formulated the idea of genius, it was Young who developed the idea,[24] which Lessing accepted, and the "Sturm und Dränger" disseminated.[25]

While Lessing probably did not know the Dryden-Dennis letter, he knew from the *Essay* that Dryden considered Shakspere a greater dramatist than all modern writers, and in the *Literaturbrief* he commends the translation of Shakspere's masterpieces, and proclaims him a genius. "Denn ein Genie kann nur von einem Genie entzündet werden, und am leichtesten von so einem, das alles blosz der Natur zu danken zu haben scheinet . . . ." Like Dryden, he utters this in Shakspere's presence with the translation of the *Essay* still fresh in mind.

Finally Dryden lays down the principle, and throughout the *Essay* insists, that short speeches and quick replies move the passions more, and bring greater pleasure to the audience than the long speeches. "It cannot be denied that short speeches and replies are more apt to move the passions and beget concernment in us, than the other; for it is unnatural for any one in a gust of passion to speak long together . . . ." In the Comedy he regards repartee one of its chief graces. "The greatest pleasure of an audience," he says, "is a chase of wit, kept up on both sides, and swiftly managed." Beaumont and Fletcher he regards supreme in quickness of wit in repartee, but in wit he naturally places Shakspere above Jonson.

Similarly in the conclusion of the *Literaturbrief* Lessing commends a chase of wit. "Das aber unsre alten Stücke wirklich sehr viel Englisches gehabt haben, könnte ich Ihnen mit geringer Mühe weitläufig beweisen. Nur das bekannteste derselben zu nennen, 'Doctor Faust' hat eine Menge Szenen, die nur

[23] Scott-Saintsbury, XVIII, p. 117.

[24] Kind, *Edward Young in Germany*, p. 2 ff., New York, 1906.

[25] Hamelius, *Die Kritik der englischen Literatur des 17. und 18. Jahrhunderts*, p. 49, Leipzig, 1896.

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ein Shakspere'sches Genie zu denken vermögend gewesen." Then he quotes a fragment of his own *Faust*, depicting the scene between Faust and the seven fleet spirits of hell, which is made up of short speeches and quick replies. At the close of the scene he adds: "Was sagen Sie zu dieser Szene? Sie wünschen ein deutsches Stück, das lauter solche Szenen hätte? Ich auch."

3. German Criticism of the *Essay* after Lessing's Translation

Naturally Dryden's *Essay* won prestige in Germany through Lessing's translation, and the utterances in the *Literaturbrief*. After Lessing's connection with it German critics quote from and cite the *Essay* as if it were generally known and accepted as an authority. Concerning Dryden's claim for English humor, especially in Jonson, the *Bibliothek der schönen Wissenschaften* (1762) remarks: "Dasz die Franzosen, wie Dryden anmerket, nichts aufweisen können, was dem Humor des Ben Jonson gleich käme."[26] In the *Hamburgischen neuen Zeitung* Gerstenberg substantiates his claim that nothing is easier than writing a French tragedy with: "Schon Dryden sagte zu seiner Zeit, dasz nichts leichter wäre, als ein französisches Trauerspiel zu schreiben."[27] Schütze, the Hamburg theater-historian, laments that Gottsched introduced from France the servile observance of the stage. "Schon der Britte, Driden, warf den Franzosen vor, dasz sie durch die zu ängstliche Beobachtung des Regelmässigen den grösz-ten Haufen der Zuschauer einschläferten."[28]

Further proof of Dryden's influence upon Lessing is furnished by the commendatory reviews of the *Essay* itself, and of Lessing's translation. The *Berlinische priv. Zeitung* (May 22, 1759) designates the translation "einen lehrreichen Auszug."[29] Dryden's *Essay* is one of the few English works on the drama known to Schmid, who gives it the first rank, and also cites Lessing's trans-

[26] VII, Stück 2, p. 354.

[27] See *Literatur Denkmale*, CXXVIII, p. 155, Berlin, 1904.

[28] *Hamburgische Theatergeschichte*, p. 216, Hamburg, 1794.

[29] Julius W. Braun, *Lessing im Urtheile seiner Zeitgenossen*, p. 96, Berlin, 1884.

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lation.[80] Bouterwek regarded Dryden the founder of the theory of the English drama "durch seinen vortrefflichen Versuch über die dramatische Dichtkunst."[81] Besides making a detailed analysis of the *Essay* he also prints in foot-notes the passages from the *Essay* containing the characterization of Shakspere, and that dealing with the decorum of the French stage. He considers the criticism of Dryden in the *Essay* and elsewhere both sane and impartial.

CHAPTER III. The Drama

Although the dramas of Dryden constitute the larger part of his literary efforts, they are inferior to his critical, satirical, and lyrical works. His twenty-six plays consisting of ten tragedies, ten comedies, three tragi-comedies and three operas, cover a period of twenty-five years of his career, beginning with *The Wild Gallant* published in 1669 and concluding with *Love Triumphant,* published in 1694. Many of them were heroic plays based on the French romances of Madame Scudery and others. For a time they were exceedingly popular with the theater-going public of the Restoration Period, but were short lived on account of their bombast. His comedies as well as his serious plays abound in heroic speeches, and more frequently portray types than individual characters, but for all that they contain many beautiful passages.

1. The Four Plays Translated in Germany

Four plays of Dryden were translated in Germany: *The Spanish Friar* (1681), *The State of Innocence* (1674), *Oedipus* (1679), and *All for Love* (1678); but their influence on the German stage is not marked, and the translations were not made by the first poets of Germany. Unfortunately Lessing's plan to translate and discuss the plays of Dryden in the *Theatralischen Bibliothek*[1] did

[80] *Theorie der Poesie,* p. 404.

[81] Loco citato, VIII, p. 54 ff., 1810.

[1] Loco citato, chapter XII, p. 360 in *Lessings Werke, D. N. L.,* vol. 62 (1755).

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not materialize; probably due to the later discovery of the real character of the plays and to his other numerous undertakings.

A. The Spanish Friar

The first play of Dryden translated in Germany was *The Spanish Friar,* but it was never published. A written copy is in the "geheimen Haus- und Staatsarchiv" at Stuttgart with the title: *Comoedia, genannt Der Spannische Münch und Ehrlich Rebell, wurde presentiert vor Carolo dem 2ten König von Grosz-Britannien Durch dero Hoff Comoedianten componiert...Von Johann Dryden höchstberühmten Poeten und übersetzt ausz dem Englischen in das Hochdeutsche Durch Casper Spannagel, Englischer Künstler.*[2] As the play was not printed until 1681 and the reign of Charles II closed in 1685, the Court Comedians must have performed it during that interval. The date of the translation cannot be definitely established, as nothing is known of the translator, and the translation is not dated, but it was probably made during the author's lifetime or soon after. Germany's interest in the "Singspiele" and the opera at the close of the seventeenth and the beginning of the eighteenth century, and Dryden's renown as poet likely account for the translation. The records apparently do not show whether the play was performed at the court of Würtemberg, but the translation is significant, because it indicates that even during the Restoration English comedians seem to have had some relation to Germany.

B. The State of Innocence

The Spanish Friar was followed by *The State of Innocence,* which attracted but little attention in England and was brought into Germany as a companion work of *Paradise Lost,* the source for Dryden's opera. The enthusiasm for Milton's epic spread by Bodmer, and the religious sentiment prevailing in Germany and Switzerland account for its introduction and translation. Bodmer early became acquainted with this play through the

[2] Josef Sittard, *Zur Geschichte der Musik und des Theaters am Würtembergischen Hofe. Nach Originalquellen,* Erster Band, 1458–1733, p. 223, Stuttgart, 1890.

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English moral weeklies, and the references to it in the introduction of *Paradise Lost* which he translated along with the epic itself in 1724.[3] The introduction contains the account of Milton's original intention of writing a play on the fall of man and the later rejection of this plan which Dryden took up, transforming the material into an opera. It also contains a characterization of Dryden's work: "Darinn findet sich zwar eine neuere und feinere Sprachart als in Miltons Paradiese, aber in den verliebten Theilen äussert sich mehr Künsteley und mehr Galanterie als mit dem Stande der Unschuld überein kömmt. Die Vorrechte der Weisheit Adams und die Schönheit der Eva werden nicht geschickt genug aus einander gesetzt."

Bodmer frequently quoted passages from *The State of Innocence,* or *The Fall of Man,* as the Germans usually designated it, and almost invariably translated them. Most of these passages are to be found in the *Tatler* and the *Spectator,* but it scarcely seems possible that he was not familiar with the opera itself, since he was so deeply interested in the theme of the fall of man. As early as 1740 some of these passages and an original criticism of *The Fall of Man* appeared in his treatise *Von dem Wunderbaren in der Poesie,* which he published in conjunction with his defense of *Paradise Lost* and Addison's essay on its beauties.[4] The criticism is in connection with the scene in which Adam accepts the forbidden fruit from Eve. He regards Dryden's characterization of Adam in the scene superior to that of Milton because it is consistent with his character of a romantic lover throughout the play. "Hingegen hat der lose Dryden seinem Adam durch sein gantzes Gedicht eine verzärtelte und aus sich selbst gesetzte Liebe

[3] *Johann Miltons Verlust des Paradieses. Ein Heldengedicht. In ungebundener Rede übersetzet.* Zürich, Gedruckt bey Marcus Rordorf, 1732. Bodmer completed the translation eight years before it was published. See Th. Vetter in *Johann Jakob Bodmer Denkschrift Zum CC. Geburtstag,* p. 349, Zürich, 1900.

[4] Joh. Jacob Bodmers *Critische Abhandlung von dem Wunderbaren in der Poesie und dessen Verbindung mit dem Wahrscheinlichen in einer Verteidigung des Gedichtes John Miltons von dem Verlornen Paradiese; Der beygefüget ist Joseph Addisons Abhandlung von den Schönheiten in diesem Gedichte,* verlegts Conrad Orell und Comp., Zürich, 1740.

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zugeschrieben, in welcher er beynahe die grösste Vortrefflichkeit und das höchste Gut der ersten Menschen zu setzen scheinet. Drydens Adam ist sich also in solchen ungereimten Ausschweifungen beständig gleich, Miltons aber scheinet mir von seiner ersten Hohheit und Obermacht des Verstandes einen plötzlichen Sprung zu solcher auszschweiffenden Leidenschaft zu thun."[5]

Bodmer's familiarity with *The Fall of Man* and Dryden is again evident from the commentaries of the 1742 edition of Milton's epic, which contain numerous citations from Dryden's Play, an analysis and criticism of the scene between Eve and the serpent,[6] a comment from Steele on the bower scene which apparently was for the purpose of refuting Addison's contention, that Dryden at times offended good morals,[7] a quotation from *All for Love,*[8] and one from *The Flower and the Leaf."*[9]

The translation of Dryden's *State of Innocence* was probably hastened by Lauder's *Essay*[10] in 1750 in which he accused Milton of plagiarism. Although the accusation was at once proved unfounded, it revived the Gottsched-Bodmer controversy in which Nicolai[11] and Lessing[12] also took a part, and because of its close

[5] Ibid., p. 195.

[6] Bodmer says (p. 399): "Dryden hat in seinem Drama von dem Fall der Menschen . . . nicht ohne sonderbare Kunst gedichtet, weil Eva neben dem Baum gestanden und, gewünschet, dass ihr alle andere Bäume, nur dieser nicht wären untersagt worden."

[7] Loco citato, p. 348 ff. The quotation is from the *Tattler* No. 6, which relates the liberties a Miss Sappho took in her conversation, but which every one excused because they knew it was her custom. When Mr. Bickerstaff called upon her she had just broken her fan on which Adam and Eve were artistically portrayed asleep in paradise with arms entwined. This gave occasion for the reading of the passages on the theme from Milton and Dryden and comparing them.

[8] Ibid., p. 167. [9] Ibid., p. 193.

[10] *An Essay on Milton's Use and Imitation of the Moderns in his Paradise Lost,* London, 1750.

[11] *Untersuchung ob Milton sein Verlohrenes Paradies aus neuern lateinischen Schriftstellern ausgeschrieben habe. Nebst einigen Anmerkungen über eine Recension des Lauderischen Buchs von Miltons Nachahmung der neueren Schriftstellern.* Frankfurt und Leipzig, 1753.

[12] Lessing reviewed Nicolai's work in the *Berlinischen priv. Zeitung,* December 25th, 1753, and is extremely harsh in his criticism of Gottsched.

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relation to *Paradise Lost, The State of Innocence* also became involved.[13] Of *The State of Innocence* three translations were made in Switzerland;[14] the first was published in 1754,[15] the second in 1757,[16] and the third in 1761.[17] The translations appeared anonymously, but from the following evidence I conjecture the first to belong to Simon Grynaeus: The preface is signed "G" and a "G" appears on the upraised standard of the etching on the frontispiece. Grynaeus was in the habit of using this signature in his letters to Bodmer;[18] in 1753 Grynaeus made a prose translation of *Paradise Regained,* to which he added a sketch of the life of Milton; this translation is in prose and has a sketch of Dryden added; in 1756 he translated a collection of English works in hexameters[19] and merely signed his name to the preface; likewise the translation of Nathaniel Lee's poem dedicated to *The State of Innocence* and prefaced to this translation is in hexameters and only the preface has a signature; and finally, Grynaeus

[13] Gottsched argued that *The State of Innocence* proved conclusively that Milton was a plagiarist. "Das Trauerspiel, vom Stande der Unschuld, oder Fall des Menschen, welches Dryden aus dem miltonischen verlornen Paradiese gezogen, gibt endlich den vollkommensten Beweis ab; indem es zeiget, dasz dasjenige, was aus einer Tragödie entstanden, auch sehr leicht wieder in eine Tragödie verwandelt werden könne. Nur dieser merkliche Unterschied befindet sich unter den zween Verfassern, dass Dryden, der doch eben nicht für den strengsten Moralisten bekannt ist, frey gestanden, wem er seine Erfindung schuldig wäre." See *Das neuste aus der Leipziger Anmuthigen Gelehrsamkeit,* p. 351, 1752.

[14] I had access only to the first translation, and to the two scenes published in the review of the third in *Anmuthige Gelehrsamkeit,* p. 613 ff., 1761.

[15] *Der Stand der Unschuld und Fall des Menschen. Ein aus dem Englischen des berühmten Dryden übersetztes Schauspiel. samt einer Lebens-Beschreibung des Verfassers. Franckfurt und Leipzig, Zu finden in der Buchnerischen Handlung,* 1754.

[16] *Der Fall des Menschen; Ein Schauspiel aus dem Englischen,* Basel, 1757.

[17] *Der Fall des Menschen; aus dem Englischen, weiland Herr Dryden, Frankfurt und Leipzig, in der Fleischerischen Buchhandlung,* 1761.

[18] See *Bodmer Denkschrift,* p. 282.

[19] See Lessing's *Literaturbrief,* 39.

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was interested in the fall-of-man theme and also made a partial translation of *Paradise Lost*.[20]

The second translation was made by Spreng.[21] The third translation I again conjecture to be the work of Grynaeus. It could not have been Spreng, as Gottsched said the translator had given the translation to Spreng,[22] who changed it. In the review which Gottsched made at his request, as he tells us, he characterizes the translator as a German meriting respect, a clever fellow who was known through his numerous other works. This characterization fits Grynaeus, who had made a number of classical translations besides that of the Bible. Moreover he was also a theologian apparently interested in the theme, and as stated above, had used blank verse in other translations.

The 1754 translation is a literal prose rendering of the text, showing marks of the Swiss dialect and an occasional error in translation. Prefaced to the text are Dryden's *Dedication to the Duchess of York,* and his *Apology for Heroic Poetry* and *Poetic License.* The sketch of Dryden's life (20 pages), taken from the *London Magazine* for the year 1752, is added as an appendix to the text. This as well as the *Apology for Heroic Verse* is an important contribution so early, as they appeared only four years after the translation of Voltaire's *Lettres,* and four years previous to Lessing's translation of Dryden's *Essay.* The preface of the translator speaks of Dryden as if he were familiar to his readers, and excuses his literal prose translation by calling attention to the *Nachtgedanken* and other poems sub-

[20] Baechtold, *Geschichte der deutschen Literatur der Schweiz,* pp. 486–488.

[21] The review in *Anmuthige Gelehrsamkeit* (1761) by Gottsched says: "Vor etlichen Jahren gab der Hr. Uebersetzer (of the third translation) sie dem Hrn. Prof. Spreng, der nach Belieben damit geschaltet hat. Er reimte sie, setzte zu, und that davon; und ging weit von Dryden ab: und so gab er sie unter seinem Namen heraus. So sah dann die Tochter vor der Mutter das Licht."

Baechtold, loco citato, says: "1753 uebertrug er (Spreng) Dryden's Schauspiel von dem Fall des Menschen in Blankversen. . . . Dasselbe erschien in 1757 zu Basel in Druck."

[22] See note 21.

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ject to the same criticism. The lines dedicated to the translator by B(odmer) show his intimate connection with the translation.

> "Du stellst, geehrter Freund! das würdigste Gedicht,
> So Dryden England gab, in Deutschland an das Licht
> Dein Leser wird gewisz sich dir verpflicht erkennen,
> Und, wann er Dryden nennt, auch dich mit Achtung nennen."

Of the 1757 translation the criticism of Baechtold cited above, that it is in blank verse, and that of Gottsched, that Spreng deviated from the original, is all the evidence at my disposal. The 1761 translation is not perfect, as is seen from the following passages which for the sake of comparison are added:

1754.	Act I, Scene 1.	1761.
Ist dieses der Wohnplatz, welchen uns der Sieger angewiesen hat? Ist dieses das Clima, welches wir für den Himmel verwechseln müssen? Dieses sind die Gegenden, die Reviere, welche meine Waffen erobert hat; Dieses trauervolle Reich ist des Uberwundenen Loosz: In flüszigen Feuerbränden, oder auf einem dürren ausgediegenen Lande zu wohnen, hierinn bestehet die ganze traurige Abwechslung der Hölle. Aber siehe, der Sieger hat von weitem her seine Kriegsknechte, die Stürme, seiner Diener der Rache zurückberufen: Seine Pfeile sind verschossen, und seine ermüdete Donner schlafen; Sie brüllen nicht mehr durch die grenzenlose Tiefe. Das beste wird seyn, wenn wir diese Feuermeere verlassen, alldieweil uns Musse dazu uns vergönnet ist.		Ist diesz der Sitz, den uns der Ueberwinder gab? Und solchen Tausch dringt er uns für den Himmel auf? Mein Krieg erwarb diesz Reich und diese Gegenden. Diesz leidige Fürstenthum, ist des Besiegten Loos, Wo theils ein flusz'ger Brand, theils Dürren zu bewohnen, Der Höllen einziger, unseliger Wechsel ist. Doch, sieh, es ruft dort in der Ferne schon, Der Sieger seinen Rachgewittern. Den Dienern seines Kriegs, zurück. Die Pfeile sind verthan, sein müder Donner schläft, Und brüllt nicht mehr, durch die grenzlosen Tiefen. Das Beste ist, Da es Gelegenheit, und Zeit erlaubt und giebt, Wir winden uns aus diesen Feuerwellen.

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ACT V, SCENE 1.

Mir däucht, ich gehe leichter davon; Meine hurtige Füsse prallen von den unbeschädigten Blumen zurück; Ich wandle in der Luft, und achte mich zu gut für diese irrdische Wohnung; Der Himmel ist mein Palast; dieses ist meine schlechteste Hütte. Himmel, nimm mich nicht zu frühe zu dir; es würde was unfreundliches seyn, wenn ich meinen Bettgeferten zurück liesse. Ich liebe die Unglückseligen. Doch, halt, soll ich ihm Theil hievon geben? Er ist bereits schon zu viel mein Herr. Nun steht es bey mir, die Herrschaft an mich zu bringen; und, weil mein Erkenntnis grösser ist, seinen hochtrabenden männlichen Sinn zu beugen.

Mich deucht ich trete leichter als zuvor.
Mein flinker Fuss, drückt kaum den Rasen nieder,
So prellt er wieder auf, als flög'ich in der Luft.
Pfuy dieses Erdensitzes!
Der Himmel ist mein Wohnpallast
Diesz Paradiesz nur eine Nebenhütte.
Doch, Himmel, nimm mich so geschwind nicht auf,
Es wäre hart, den Bettfreund so zu lassen.
Der Unglückselige! ich lieb'ihn dennoch fort.
Doch! 'Geb'ich ihm auch Theil? Er meistert schon zu viel.
Die Einzelmeisterschaft, steht nun in meiner Macht,
Und da ich weiser worden bin,
Ists nun an mir, die Mannheit ihm zu beugen.

C. Oedipus

From the French the Germans borrowed the idea of translating and publishing plays in collected form. The first collection of English plays thus translated into German appeared anonymously at Basel in 1758 under the title: *Neue Probestücke der Englischen Schaubühne aus der Ursprache übersetzt von einem Liebhaber des guten Geschmacks.*[23] This collection which Baechtold ascribes to Grynaeus,[24] contains nine plays by Young, Addison, Dryden and Lee, Otway, Shakspere, Congreve, Mason, and Rowe. Nicolai in his review found fault with the translation, but commended the undertaking, and like Lessing in the *Literaturbrief* recommended the translation of Shakspere.[25] Accord-

[23] See Gottsched's *Zusätze*, p. 295, Leipzig, 1765.
[24] Loco citato, p. 546 and Anhang, p. 174.
[25] *Bibliothek der schönen Wissenschaften*, VI, pp. 60–74.

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ing to Nicolai the iambic pentameters in blank verse were at times so jolting, so devoid of harmony, so full of dialect [so schweitzerisch], that prose would have been far preferable. Then while here and there a passage was well done, others were insipid, tedious, abounding in inartistic and unusual expressions.

The first play in the third volume was *Oedipus, ein Trauerspiel in fünf Aufzügen, aus dem Englischen des Herrn John Dryden und Nathaniel Lee.* There seems to have been a revival of *Oedipus* about the middle of the eighteenth century in Europe, and that accounts for the translation of the Play by Dryden and Lee.[26] In a review of one of these plays in the *Bibliothek der schönen Wissenschaften,* the criticism that Dryden made of Sophocles' Play on the same theme is referred to by the reviewer.[27]

D. All for Love

Dryden's best play, *All for Love,* received the greatest recognition in Germany. It was one of the first English plays read by Bodmer[28] in 1723. Citations from it were not uncommon.[29] It was translated and used as a source for a German play after Shakspere's play on the same theme had been translated by Wieland and Eschenburg. The first translation was made by Schmid in 1769[30] under the title *Kleopatra.* Schmid was not a master of English and many glaring errors crept into the translation. He learned to know the Play through Prévost's French translation which appeared in Paris in 1735.[31] While he regarded

[26] Voltaire's play gave the first impulse in this revival. In 1748 his *Oedipus* was translated at Braunschweig, and in 1749 at Vienna. See Gottsched's *Nöthiger Vorrath zur Geschichte der Deutschen Dramatischen Dichtkunst,* pp. 328, 333, etc., Leipzig, 1757.

[27] VII, Stück 2, p. 326. 1762. The review is of the *Drei neuen Trauerspiele, nämlich Johanna Grey, Tokenburg und Odip,* Zürich, 1761.

[28] See *Bodmer Denkschrift,* p. 322.

[29] See note to p. 167 of Bodmer's 1742 translation of *Paradise Lost,* and *Aesthetik in einer Nusz,* p. 384.

[30] Christian Heinrich Schmid, *Englisches T* Dodsley und comp., Frankfurt und Leipzig, 1769. *All for Lo* ame, page 1 ff.

[31] See Schmid's *Theorie der Poesie.* p. 471. *logue* under Dryden.

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All for Love as Dryden's masterpiece, he did not give his tragedies a high rank. "Seine Trauerspiele haben mehr Tragische Sprache, als tragische Situationen und wie er selbst gesteht, liesz er sich darinnen oft zum Pöbel herab, oder ward übertrieben, wenn er erhaben sein wollte."[32] Reviews of Schmid's translations appeared in the *Göttingischen Anzeigen für Gelehrten Sachen,*[33] and in the *Almanach der deutschen Musen.* The latter commends the undertaking, but bewails the lack of unity and calls it "Eins der deklamierenden Trauerspiele."[34]

A second translation appeared anonymously at Mannheim in 1781 under the title: *Alles für Liebe, ein Trauerspiel in fünf Aufzügen. Aus dem Englischen des Dryden.* Mannheim became prominent as a literary center during the latter part of the eighteenth century. One of the most active members of the Mannheim literary group was Professor Anton von Klein.[35] He was editor in chief of the collection of foreign translations, in which a revised edition of Eschenburg's Shakspere translation also appeared. Dalberg and Gemmingen, also active members of the group, translated an *Englisches Theater. All for Love* was the first play included in this collection. In the preface the editor says that good translations of English and French plays are always welcome, but that for the most part Germany can not be proud of her translations, as they do not include the best plays and contain numerous errors. He then points out some of the errors in Schmid's translation of *All for Love,* which he considers one of the best English plays. "Es sind wenige Stücke, selbst unter den shakspearischen, worinn mehr grosze und herrliche Züge vorkommen als in diesem. Die Charaktere sind vortrefflich gezeichnet. Der Plan ist sehr gut ausgelegt und das ganze fast durchaus gut geführt. Indessen hat es seine kleinen Flecken und seine groszen Fehler. . . . Hier übergiebt man das Trauerspiel getreu nach dem Original in die Hände des Publikums um den groszen Mann,

[32] Loco citato, p. 471.

[33] P. 1290, 1769.

[34] For 1770, p. 176.

[35] See B. Seuffert, "Geschichte der deutschen Gesellschaft in Mannheim in *Anz. für d. Altertum,*" VI, p. 276 ff.; and J. H. Heinzelmann, "Pope in Germany in the Eighteenth Century," *Modern Philology,* X, p. 348 ff.

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den erhabnen Verfasser in seiner Grösse und Schwäche, so wie er ist, zu zeigen."[36]

The translation is in prose and is on the whole well done, but the beginning of Act II will show that the translator has not succeeded in always rendering the text "getreu nach dem Original":

KLEOPATRA, IRAS UND ALEXAS

K. "Was soll ich thun, oder wohin soll ich mich wenden? Ventidius hat gesiegt, und er wird gehen.

A. Er geht für dich zu kämpfen.

K. Dann würde er mich sprechen, ehe er ginge. Schmeichle mir nicht; ist er einmal fort; so ist er verloren; und alle meine Hoffnungen sind vernichtet.

A. Kömmt diese schwache Leidenschaft einer mächtigen Königinn zu?

K. Ich bin keine Königinn. Heiszt das eine Königinn seyn, wenn man von jenen stolzen Römern ('yon insulting Roman') belagert ist und jede Stunde des Siegers Ketten erwartet? Dies sind die geringen Uebel: Antonius ist verloren, und ich kann in der Welt für nichts als für ihn trauren. Itzt komm Octavius! ich habe nichts mehr zu verlieren; bereite deine Bande; nun kann ich eine Gefangene seyn: Antonius verläszt mich—es ist ein Glück, eine Sklavinn zu seyn.

("I'm fit to be a captive: Antony
Has taught my mind the fortune of a slave.')"

All for Love was also one of the sources for a play at Vienna, where at this time the English influence on the theater displaced the French.[37] In 1783 Cornelius Hermann von Ayrenhoff's tragedy, *Kleopatra und Antonius,* was performed at the royal theater of Vienna. In the introduction the author mentions Shakspere, La Chapelle, Lohenstein, and Dryden as sources. He used only the German translations of the plays of Shakspere and Dryden; in the latter case it was the Mannheim *Alles für Liebe.*[38]

[36] Vorrede, p. xix.

[37] Emil Horner, "Das Aufkommen des Englischen Geschmacks in Wien, und Aurenhoffs Trauerspiel, Kleopatra und Antonius." *Euphorion,* II, pp. 556–571 and 782–797.

[38] Whether Leopold Neumann's duodrama on the Antony and Cleoparta theme, published at Dresden in 1780, was connected with Dryden's play, I was unable to determine, as I did not have access to the play.

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2. *The Tempest or the Enchanted Island,* A Source for Bodmer's *Noah*

No other plays of Dryden were translated in Germany during the eighteenth century, but Bodmer incorporated lines and situations from *The Tempest, or The Enchanted Island* (1670). As early as 1743 he spoke of the beauty of innocence as depicted in *The Enchanted Island* and *The Conquest of Mexico.*[39] Three years later he translated a number of lines from *The Tempest,* which he prefaced with "In einem Engell. Schauspiel, die bezauberte Insel betietelt, wird ein junger Mensch eingeführt, der niemals keine Frauenpersonen gesehen hat; ihm eine Furcht vor ihnen einzujagen, beschreibt sie ihm sein Oheim also: Bilde dir ein Mittelding zwischen jungen Männern und Engeln ein . . . ."[40]

Later this situation and a number of others from *The Enchanted Island* were incorporated by Bodmer in his epic, *Noah.*[41] In Dryden's *Tempest* Prospero, Duke of Milan, brings up his two daughters and Hippolito, heir to the Dukedom of Mantua, in exile on an enchanted island, keeping them ignorant of the opposite sex. Bodmer similarly depicts the three sons of Noah and the three daughters of Sipha, who were isolated from the world, being inclosed by mountains. As Prospero warns his charges against the wildness of man and the enticing danger of women, so the sons of Noah and the daughters of Sipha were similarly warned.

The parallel passages follow.

Prospero describes women to Hippolito as:

> "Something between young men and angels . . .
> Calm sleep is not so soft; nor winter suns
> Nor summer shades, so pleasant. . . .
> Their voices charm beyond the nightingales":—II, 2.

Japhet, Noah's youngest son, described the maidens thus:

"Sie sind ein Mittelding zwischen Jüngling und Engel. Der Schlaf ist Nicht so sanft, als ihr Thun, noch die kühlenden Schatten so lieblich, Als ihr erquickender Mund: Musik ist in jeglichem Worte," III, 595 ff.

[39] *Critische Schriften,* VII, p. 9.
[40] *Der Maler der Sitten,* I, pp. 419–420, Zürich, 1746.
[41] *Der Noah, in Zwölf Gesängen.* Zürich, bey David Geszner, 1752.

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In reply to Prospero's description: "Those who once behold them are made their slaves forever," Hippolito says:

> "Can they be fairer than the plumes of swans? . . .
> Or than the gloss upon the neck of doves?
> Or have more various beauty than the rainbow?" II, 2.

Sham asks Japhet:

"Ist sie so fürchterlich grosz, ist der Mädchen Schönheit so Sieghaft?
Können sie heller seyn, als die weissen Federn der Schwäne,
Oder anmutiger, als der Glanz am Nacken der Dauben?
Oder sind ihre Farben verschiedner und feiner vertheilet,
Als der träufelnde Staub, der die Sonnenstrahlen gebrochen," III, 582 ff.

At first sight both Hippolito and Japhet believe the maidens to be children of the heavenly sun.

> "What thing is this? Sure 'tis some infant of the
> Sun, dressed in his father's gayest beams,
> And come to play with birds": II, 3.

"... o flieht nicht, Kinder der himmlischen Sonne, ...
Schön geschmückt ... in der hellsten Farben der Sonne, ...
Mit dem schlechtern Schmuck der Blumen zu spielen."

The first sight Dorinda gets of Hippolito has the same effect upon her as the first sight of Japhet has upon the three daughters of Sipha:

> "At first it stared upon me, and seemed wild,
> And then I trembled; yet it looked so lovely,
> But when I would have fled, my feet
> Seemed fastened to the ground . . . " III, 2.

"Eben so schienen die Mädchen bestürzt, und standen erstaunt da,
An den Boden der Fusz, das Aug an Japhet geheft." I, 141–142.

Hippolito and Ferdinand are described as a bud and a full-blown flower:

> "For shortly, my Miranda, you shall see
> Another of his kind, the full-blown flower
> Of which this youth was but the opening bud." III, 2.

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Japhet compares his lovely maid to the opening bud, and her sisters to full-blown roses:

"Eine nicht völlig entwickelte Rosenknospe, . . .
Zwo entfaltete Rosen in ihrer vollkommenen Blühte." III, 621 ff.

Both Ferdinand and Japhet believe their fair ones to be divine apparitions:

"Fair Excellence! if, as your form declares,
You are divine, be pleased to instruct me how
You will be worshiped; so bright a beauty
Cannot belong to human kind." III, 5.

"Schönste Gestalt des Menschen, vernimm die flehende Bitte;
Bist du. ich muss es billig besorgen, von himmlischer Ankunft.
So entdecke, mit welchem Gehorsam kann ich dich halten!" I, 166 ff.

The feelings which Hippolito and Japhet experience when they first touch the hands of the maidens are akin:

". . . there is something,
When I touch yours (hand) which makes me sigh: . . .
Yet mine's a pleasant grief; . . ." II, 3.

"Aber voraus durchlief mich ein zärtlich fliessender Schmerzen.
Mit so lieblichen Schlägen; dass ich vor süszer Empfindung
Seufzete, da ich die Hand des einen Mädchen ergriffen." III, 616 ff.

Both Hippolito and Japhet are haunted by the fear of losing their fair maids through other lovers:

"And would you have her too? That must not be:
For none but I must have her." III, 4.

"Lasset mir die, und theilet euch in den übrigen beyden; . . .
Was für ein Unmuth droht in mein Gemuthe zu schleichen,
Wenn ein andrer sich um die schöne Blume bemühte." III, 623 ff.

This fear is allayed by the replies of Ferdinand and Sham:
'All beauties are not pleasing alike to all." III, 4.
"Jegliche Schönheit thut nicht den gleichen Anfall auf alle." III, 692.

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CHAPTER IV. The Fables and Poetic-Classical Translations

The fables[1] of Dryden were more popular in Germany than his dramas. Although written in his old age, they have a charm and sprightliness which today still give them a high rank among his works. Their poetic charm may be attributed to the nature of the composition. Inasmuch as the translations were free, the author could concentrate his efforts upon the form and meter. It was this elegance of form which appealed to the German poets, and in turn influenced their form.

Dryden's fables were reviewed early in Germany. About the middle of the eighteenth century they attained their highest popularity, and at the conclusion of the century they were again revived; it was at this time that *Alexander's Feast,* on account of its lyrical elements, was so highly esteemed as an ode among the Germans. A commendatory Latin review of the fables appeared at Leipzig in the same year in which they were published in England.[2] Four of the fables in this collection: *Philemon and Baucis, Cymon and Iphigenia, The Cock and the Fox,* and *Theodore and Honoria* found their way into Germany, the last two being translated.

Philemon and Baucis was a source for a fable with the same title by Hagedorn (1708–1754).[3] Hagedorn's fondness for the fable, upon which his fame as a poet rests, drew him to La Fontaine, Gay, and Prior more frequently than to Dryden, whose fables he however learned to know during his stay in England in 1729.

In his *Philemon and Baucis* (1739) Hagedorn introduces more of the idyllic and naive element, dwelling on some details which Dryden merely indicated. In his versification, however, the influence of Dryden and his pupil Pope, is more evident. He em-

[1] *Fables, Ancient and Modern, Translated into Verse from Homer, Ovid, Boccace, and Chaucer, with Original Poems,* London, 1700.

[2] *Acta Euriditorum . . .* , pp. 321–325, Lipsiae, 1700.

[3] The *Göttinger Zeitung von Gelehrten Sachen* (p. 108, 1739) reviews Hagedorn's fables, and calls attention to Dryden as one of the sources for *Philemon and Baucis.*

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ploys their iambic pentameter, but at times expands it into six feet, or contracts it into four. Similarly he occasionally substitutes alternating rhyme for their rhymed couplets. In a number of his other fables and poems he uses the iambic pentameter rhymed couplet throughout, or as in *Philemon and Baucis,* substitutes it for the alternating rhyme.[4]

Like Hagedorn, Bodmer and his friends were also interested in the fables of Dryden. Spreng esteemed Dryden as a poet and fable-writer.[5] "Seine Fabeln," he says, "verdienen den Beifall aller Kenner." In 1742 Bodmer quoted and translated the first six lines of *The Flower and the Leaf.*[6] He was also fascinated by the idyllic character of Cymon, and wished Gleim to make use of Bocaccio's *Cymon* for a Schäferspiel.[7] For the ensuing two years in their correspondence Bodmer, Sulzer, Gleim, and Ramler discussed the writing of a Schäferspiel on the same theme. Bodmer first suggested to Gleim that Hagedorn or Rost make use of the material,[8] but later himself made a prose sketch and wished Gleim or Kleist to put it into verse.[9] That Gleim seriously considered writing on the theme is apparent from his subsequent letter. "Ich las neulich den 'Timon des Dryden'; die Fabel schien mir bequemer zu einer Erzählung, als zu einem theatralischen Stücke. . . . entweder ich, oder einer meiner Freunde, den

[4] In *Herrn Friedrich von Hagedorns Poetische Werke bey Johann Carl Bohn,* 3 vols., Hamburg, 1757, the following imitate the meter of Dryden and Pope: Der Ursprung des Grübchens im Kinne, II, 186–184; Der Falk, II, 293–304; Aurilius und Belzebub, II, 122; Paulus, Purgenti, und Agnesi, II, 179–185; An einen Maler, I, 152; An Murtzerpheus, I, 167; Auf einen ruhmredigen und schlechten Maler, I, 170; Wohlthaten, I, 171; Unterricht für einen Reisenden, I, 205; Horaz, I, 100–122. For Horaz see Muncker in D. N. L., XLV, p 31.

[5] See note to page 219 of his edition of *Drollingers Gedichte,* Frankfurt am Mayn, bey Frantz Barrentrapp, 1745.

[6] See Bodmer's 1742 edition of his translation of *Paradise Lost,* note to p. 193.

[7] *Briefe der Schweizer Bodmer, Sulzer, und Gessner aus Gleims litterarischem Nachlass herausgegeben von Wilhelm Körte.* Zürich, bei Heinrich Gessner, 1804. See Bodmer's letter to Gleim, dated July 11, 1745 (p. 15).

[8] Loco citato, Bodmer to Gleim, July 11, 1745 (p. 15).

[9] Idem, Sulzer to Gleim, January 23, 1747 (p. 43).

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Plan bebauen wird."[10] Gleim had previously asked Ramler to put it in verse, for in a letter to Gleim the latter writes: "Cimon ist ein artiges Stück, und verdient den Klang des Silbenmasses, aber geben Sie es Uzen, wenn Sie es durchaus von sich ablehnen wollen. . . . Es ist aus Drydens Erzählung genommen, worin unter anderen der Vers steht: Er pfiff indem er ging aus Mangel der Gedanken. . . ."[11]

While *Cymon and Iphigenia* was discussed by a group of poets, *The Cock and the Fox* was translated in Germany. *The Spectator* (no. 621) quoted the description of spring (lines 455–460) which Mrs. Gottsched[12] translated in her usual happy manner:

"Darauf wandt er sich und sprach zum Partlet: Sieh mich Freund,
Wie die Natur das Jahr so reich und schön geschmücket;
Die blasse Schlüsselblum und die Viol erscheint,
Da sich der Vogel Hals zum Singen wieder schicket.
Diesz alles ist für uns, wo ich mit Freuden seh,
Wie mich der Mensch begaff und auf zwey Beinen geh."

In 1758, however, a complete translation of *The Cock and the Fox* was published in the *Neuen Erweiterungen der Erkentnis und des Vergnügens.* This monthly magazine, published at Frankfurt and Leipzig, devoted itself to sketches of English writers, and to translations of their works. The first number contains a sketch of the life of Dryden, "eines groszen englischen Dichters des siebzehnten Jahrhunderts."[13] The sixty-seventh number contains a lame prose translation of Dryden's fable, *The Cock and the Fox,* which was based on *The Nun's Priest Tale* of Chaucer.[14]

[10] Idem, Gleim to Bodmer, April 29, 1747.

[11] *Briefwechsel zwischen Gleim und Ramler,* hrsg. von Schüddekopf. I, p. 78, Tübingen, 1906. Ramler to Gleim, March 2, 1747.

[12] *Der Zuschauer,* VIII, p. 274, 2d edition, Leipzig, 1749. The beautiful description of May also appeared in *The Spectator* (V, no. 365), taken from *Palamon and Arcite,* Bk. II, lines 55–57, and Bk. I, 176–180, beginning:

"Für dich, du erste nicht, doch die schönste Zeit des Jahres,
Sieht man so Feld als Wald, die grünen Kleider tragen . . ."

[13] X, pp. 52–65, 1753.

[14] *Der Fuchs und der Hahn. Eine Erzählung aus dem Englischen des Dryden,* Stück 62, pp. 97–125.

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The translator's task was made more difficult through Dryden's retention of some of the obsolete words of the Middle English. Whenever the translator found a word or an expression he was unable to translate, he either omitted it entirely, or substituted an idea of his own. The defects of the translation are apparent from the subjoined opening and closing lines.

"In alten Zeiten lebte, wie uns die Schriftsteller erzählen, eine Wittwe, die schon etwas bey Jahren und sehr arm war. Ihre mit Stroh gedekte Hütte stand einsam unter dem Schatten eines Waldes. (Deep in a cell her cottage lonely stood, Well thatched, and under covert of a wood.) Diese Wittwe, auf welche sich meine Erzählung gründet, führte nach dem Tode ihres Mannes, ein schlechtes aber ruhiges Leben, und hatte genug zu ihrem Unterhalte. . . ."

"Besser, Herr Hahn, sagte Reinart, setzet allen Streit bey Seite, kommt herunter, und laszt uns einen Frieden schliessen. (let us treat of peace) Einen Frieden; von ganzem Herzen? versetzte Chenteclär; aber mit eurer Erlaubnis, ich will ihn hier oben schliessen; und wenn der Friede mit Verrätherey sollte verknüpft seyn, so ist es wenigstens mein Vortheil, ('Tis my concern) den Baum zwischen uns zu haben."

While *Theodore and Honoria* was not translated by Eschenburg he prints the English text in his *Beispielsammlung*.[15] He prefaces the text with a characterization of Dryden as a fable writer, in which he places him above Boccaccio, and ranks his fables among his best works. . . . "Seine Fabels, oder Erzählungen, aus dem Homer, Ovid, Boccaz und Chaucer geschöpft," he says, "schrieb er erst in seinen letzten Lebensjahren; sie gehören aber zu seinen besten Arbeiten, und verrahten durchaus einen sehr gebildeten Geschmack und wahres dichterisches Gefühl. Man darf folgende Erzählung nur mit der Novelle im Boccaz vergleichen, aus welcher ihr Stoff genommen ist, um des englischen Dichters Ueberlegenheit in der Erzählungsgabe, und den mannichfachen Antheil seines

[15] *Beispielsammlung zur Theorie und Literatur der schönen Wissenschaften* von Johann Joachim Eschenburg, Berlin und Stettin, 1788–1795. *Theodore and Honore* are in I, pp. 126–138, 1788.

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Genies und der ganzen Ausführung überall wahrzunehmen. Besonders haben die beschreibenden Stellen auffallende Vorzüge."

Theodore and Honoria[16] was later translated by Bürde, a lyricist of note, who included the translation among his works.[17] The favorable criticism of Eschenburg, no doubt, as well as the poetic elements of the fable, fascinated Bürde. Like Kosegarten, as we shall see later, he does not follow the original slavishly, but aims to give it poetic expression. To accomplish this he freely expands the fable, and influenced by the varying rhyme of Dryden's *Alexander's Feast* he uses a fluctuating rhyme. The rhymed couplet of the original he changes to aa, abba, and abab which tends to enliven his translation. While he retains the iambic pentameter of Dryden, like Hagedorn, he at times contracts it into four feet. The added lines from the opening of the translation will show the hand of the poet and the deviations from Dryden in matter and form.

"Trotz irgend einer Stadt des Alterthums,
War einst Revenna im Besitz des Ruhmes
Der Waffen, der Gelehrsamkeit, und Kunst:
Die Reichen waren frey von niedrem Geize,
Die Groszen, zart empfänglich für die Reize
Des Schönen, gingen, ohne Stolz, mit Gunst
Und milder Spende dem Talent entgegen;
Doch unter allen ragte Theodor,
Der Edle, durch Geburt, Gestalt, Vermögen,
Und selbst erworbnen Ruhm hervor.
Und doch ward seine Brust von stillem Grame
Zernagt. Zu seinem Unglück sah
Er einst die schönste junge Dame;—
Denn dafür galt Honoria—
Bey Männern-ohne Wiederrede."

That the popularity of Dryden's fables was enduring in Germany, the criticism of Bouterwek will suffice to show. "Die poetischen Erzählungen," he says, "die er (Dryden) unter dem

[16] In the Introduction to the fable Scott calls it: "The most admirable poem of its kind ever written." XI, 463–476.

[17] *Poetische Schriften von Sam. Gottlieb Bürde.* Erster Theil, pp. 117–131. Breslau und Leipzig, bei Wilhelm Gottlieb Korn, 1803.

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Titel Fabeln (Fables), nach Chaucer, Boccaz, und einigen andern Dichtern, noch in seinen alten Tagen schrieb haben zwar nicht die charakteristische Naivetät der Erzählungen des französischen Dichters, Lafontaine; aber sie gehören doch zu den gelungensten Werken dieser Art in der neueren Litteratur."[18]

Closely related in spirit to Dryden's fables are his poetic-classical translations. Of these the complete translations of Virgil, and the partial translation of Homer and Ovid are the most noted, and indeed the favor with which they were received incited Dryden to take up the translation of the fables. His classical translations, especially that of Virgil, found early recognition in Germany. *The Beyträge zur Critischen Historie der deutschen Sprache und Beredsamkeit* (1732) contains a review of the German translation of Virgil which states: "Wenn ihm eine Stelle des Grundtextes etwas dunkel geschienen, hat er das fürtreffliche englische Virgil Drydens in 3 Octavbänden nachgeschlagen. . . ." The same review asserts that Dryden immortalized the *Metamorphoses* of Ovid. The *Beyträge* also reviews a translation of *Anacreon* in which it commends the classical translations of Pope, Creek, and those of Dryden.

The citations from Dryden's classical translations, and the manner in which they were quoted indicate that they were generally known in Germany. König,[19] for instance, quotes from his Ovid and Virgil translations and, contrary to his manner of dealing with other English authors, finds it unnecessary to enlighten his readers in regard to Dryden and his works. Spreng says of Dryden's Latin translations: "Er hat verschiedene lateinische Poeten in englische Verse gebracht, und sonderlich durch die Übersetzung des Virgil einen ewigen Namen bei seinen Landsleuten erworben."[20] The *Brittische Bibliothek* (1757) twice commends Dryden's translation of Virgil (pp. 89 and 328). Lessing was also familiar with the Virgil translation, and refers to it in his

[18] Loco citato, VIII, p. 52.

[19] *Untersuchung von der Einsylbigen Wörtern in der Teutschen Dichtkunst von Johann Ulrich König ausgefertigt,* appended to the life and works of Besser, pp. 887 and 889. Leipzig, 1732.

[20] See note to *Drollingers Gedichte,* p. 219.

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Laokoon;[21] and even at the close of the eighteenth century Blankenburg wrote of Dryden's translation of Virgil's *Aeneas:* "Unter den poetischen Uebersetzungen wird die von Dryden noch immer für die Beste gehalten."[22]

CHAPTER V. The Lyrics

1. Dryden's Fame as a Lyricist in England Due Largely to *Alexander's Feast*

While his fables and classical translations found favor, no other work of Dryden elicited so much commendation from the best critics and poets of England and Germany as his lyrics. This is particularly true of *Alexander's Feast, or the Power of Music,* an ode written in honor of Saint Cecelia's Day. A brief account of its reception in England will aid in better understanding the reception accorded it in Germany. At the time of its first appearance it was recognized as a lyric of unusual merit, and the number of single editions alone in the eighteenth century, more than a dozen in number, exceeded that of any of his other works.[1] This recognition continued throughout the eighteenth century, and even at the beginning of the nineteenth it was still considered the best English lyric.[2] Dryden himself regarded it as his greatest literary effort.[3] It also called forth the favorable criticism of Pope,[4]

[21] *Lessings Werke,* IX, part I, p. 43.

[22] *Zusätze,* I, p. 17a, 1796.

[1] See *British Museum Catalogue* under Dryden, p. 46 ff.

[2] The two greatest biographers of Dryden are boundless in their praise, holding *Alexander's Feast* to be not only the greatest English lyric but the greatest lyric in all literature. Malone designates it "the greatest composition of its kind in the English language" in his *Critical and Miscellaneous Prose Works of John Dryden,* . . . , I, p. 285, London, 1800. Scott says: "In lyrical poetry Dryden must be allowed to have no equal. 'Alexander's Feast' is sufficient to show his supremacy in that brilliant department." See *Scott-Saintsbury,* I, p. 409.

[3] In a letter to his publisher, Tonson, he wrote: "I am glad to hear from all hands that my ode is esteemed the best of all my poetry by all the town. I thought so myself when I writ it, but being old I mistrusted my judgment." See *Scott-Saintsbury,* XI, p. 46.

[4] From the beginning of his career, Pope was an ardent admirer of

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Ayres,[5] Young,[6] Warton,[7] and Brown,[8] besides odes on the same theme by Addison, Congreve, and Pope, while Jeremiah Clark and Handel set it to music.

A. Musical Compositions a Potent Factor in Perpetuating Alexander's Feast

These musical compositions for *Alexander's Feast* aided materially in perpetuating its renown as a lyric.[9]

Clark's composition was made for its first presentation, and was repeated at least three times in London shortly after the first regular performance. As a musical performance, however, *Alexander's Feast* seems to have been attended with only moderate success until Handel's composition revived it in 1736, when it was

Dryden. In his *Essay on Criticism* he lays down the essentials of genuine poetry, insisting that poetry must have more than cadence and rhyme, that the words must convey the thought and action conforming with the theme. *Alexander's Feast* he cites as such a poem (lines 374–383).

[5] Ayers in his work on Pope asserts that Pope was urged by his friends to write a Cecelia ode with the hope that it would bring him great renown as it had Dryden, but that it was evident that he was unable to cope with his predecessor. See Gottsched's review of *Ayres' Memoirs of the Life and Writings of Alexander Pope* (London, 1745) in *Neuem Büchersaal der schönen Wissenschaften und freyen Künste,* I, p. 142, Leipzig, 1745.

[6] Young says in his *Essay on Lyrical Poetry, The Works of the Author of the Night's Thoughts,* vol. 6, p. 164, London, 1778, that in his opinion Dryden's ode is equal to any work of similar nature, and praises especially the varying meter corresponding with the mood depicted.

[7] Warton is most profuse in his praise of the ode, "which places the British lyric poet above that of any other nation." See *Essay on the Writings and Genius of Pope,* II, p. 20.

[8] Brown introduces it several times in his treatise on poetry and music, commending its popularity due to its simplicity, and its power over our emotions. See *Dr. Brown's Betrachtungen über Poesie und Musik . . . übersetzt von Joachim Eschenburg mit Anmerkungen,* pp. 367 and 393, Leipzig, 1769.

[9] Both Malone and Scott have given a history of the patron saint of music, and of the odes written and performed in commemoration of Saint Cecelia's Day, which was celebrated in London by the Musical Society and throughout all Europe by music lovers. Dryden furnished the odes for two of these commemorations (1687 and 1697). The first was entitled: *A Song for Saint Cecelia's Day;* the second, *Alexander's Feast.*

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performed at the Royal Theater in Covent Garden under the composer's direction with marked success, according to press reports.[10] The frequent subsequent performances in England and on the Continent were due to the excellency of Handel's composition. That this composition contributed to the popularity of the lyric itself is evident from the numerous new single editions of the ode appearing immediately after Handel set it to music.[11]

B. Reasons for the Favorable Reception of Dryden's Ode in Germany

As in England, the favorable reception of Dryden's ode in Germany was due in a large measure to the prevailing enthusiasm for lyrical and emotional poetry, and to the accompanying revival of music. Shortly after the middle of the eighteenth century German poetry gradually changed from the rational and descriptive to the imaginative and lyrical. Gottsched under the influence of the French championed the cause of the rational and moral elements in poetry, while Bodmer and Breitinger under the influence of Addison and Milton advocated the imaginative and wonderful as prerequisites for real poetry.

Descriptive poetry was brought into Germany through Thomson's *Seasons,* and influenced Brockes' *Irdisches Vergnügen in Gott,* Haller's *Die Alpen,* Kleist's *Der Frühling, and* similar poems. The protest against descriptive poetry was raised first in England. Pope condemned it very severely.[12] Warton took up the issue

[10] *The London Daily Post and General Advertiser* for February 20, says: ". . . there never was, upon like occasion, so numerous and splendid an audience at any theater in London, there being at least thirteen hundred persons present; . . . . It met with general applause." *Scott-Saintsbury,* I, note to p. 344.

[11] *British Museum Catalogue.* See under Dryden, p. 46 ff.

[12] In his Prologue to his Satires Pope says of descriptive poetry:

". . . who could take offence,
While pure Description held the place of Sense?" (l. 147)

Warburton in his edition of Pope makes the following comment on the above passage: "He uses 'pure' equivocally, to signify either chaste or empty; and has given in this line what he esteemed the true character of descriptive poetry, as it is called. A composition, in his opinion, as absurd as a feast made up of sauces."

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against Pope, asserting that descriptive poetry was a sister art of landscape painting, and claiming that those who condemn Thomson must also condemn the greater part of Lucretius, and the *Georgics* of Virgil.[13] In reviewing the attitude of Warton Mendelssohn points out the weakness of his arguments. "Ohne uns eigentlich wider die malerische Poesie zu erklären, glauben wir, dass die Gründe unsers Verfassers nichts beweisen. . . . So verschwistert die Dichtkunst und Malerei sind, so hat doch eine jede Kunst ihre angewiesenen Grenzen, die durch das Werkzeug der Sinne, für welches sie arbeiten, bestimmt werden. Virgils Landbau und Lukrezens Natur der Dinge scheinen uns von Thomsons Jahreszeiten wesendlich unterschieden zu sein. Die Römer wollen eigentlich unterrichten, und malen nur zu Veränderung; der Engländer hingegeben hat keine andere Absicht als zur malen."[14] This stand taken by Mendelssohn in 1759 reflects the general trend growing up in Germany against descriptive poetry. Lessing more clearly than his predecessors defines the fields of poetry, painting, and music in his epoch-making work, *Laokoon*. With Pope, whom he quotes,[15] he agrees that descriptive poetry, per se, is puerile. Had the principles which Lessing laid down in *Laokoon* appeared earlier, descriptive poetry could never have gained such a foothold in Germany and Switzerland.

The literary enthusiasm of Germany at this time was expressed by the lyrical, imaginative, and emotional poems, as is shown by the number of translations and imitations of the odes of Horace, and the songs of Anacreon, made by such poets as Hagedorn, Gleim, Ramler, and Weisse. The ode was regarded as the best vehicle for poetic enthusiasm. Wieland wrote in a letter to Zimmermann in 1758: "Sie wissen ohne mich, dass der poetische Enthusiasmus eigentlich für die Ode ist. Der Poet ist da ganz im Affect, und gleichsam ausser sich selbst."[16] The odes of Klopstock, express-

[13] Loco citato, I, p. 49.

[14] "Moses Mendelssohn. Versuch über Popens Genie und Schriften" in *Bibliothek der Schönen Wissenschaften,* IV, 500–532 and 627–669, Berlin, 1758 and 1759 (p. 512 ff.).

[15] *Lessings Werke,* IX, p. 104, in D. N. L.

[16] *Ausgewehlte Briefe von C. M. Wieland an verschiedene Freunde in den Jahren 1751 bis 1810 geschrieben,* I, p. 263, Zürich, 1815.

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ing deep emotions of religion, patriotism, and love, even though often bordering on sentimentality, furthered this movement of poetical enthusiasm which culminated in the theories set up by Herder, that the folk-songs contained the highest poetical elements of all poetry, since they express the genuine national feelings and emotions of a people, even if such poetry belong in the category of occasional poetry to which the Saint Cecelia odes belonged.[17] In 1778 Herder, influenced by Percy's *Reliques,* made his collection of *Stimmen der Völker* to prove his theories in regard to folk-songs.

With the growth of poetical enthusiasm in Germany, the awakening of musical interest went hand in hand, directly increasing the appreciation of Handel's compositions for *Alexander's Feast* and indirectly the appreciation for the ode itself as a lyric. Naturally the folk-songs were written to be sung and not read, and spread among the masses. Ramler's interest in this popular movement is evident from the number of "Kriegslieder" and cantatas he himself wrote, and from the collection and edition of the two volumes of German songs published in 1758 with the aid of Krause, a composer of considerable note, the author of a book on musical poetry, and the reviser of Handel's composition for *Alexander's Feast.*[18]

The revival of the popular song was accompanied with the revival of the operetta which came in vogue through Weisse's "Singspiele," set to music by Hiller. Although the former was not a great opera writer nor the latter a really great composer, the operettas resulting from their combined efforts became extremely popular and opened the way for better operas and more classical music,

[17] In England the movement for the collection of old songs and ballads was begun by Dryden, Dorset, and others, and culminated in Bishop Percy's *Reliques* (1765). *The Spectator* [no. 71] commended the movement, and Hagedorn and Herder attributed to it the great lyrical poetry of the English. For Hagedorn, see his introduction to *Oden und Lieder in fünf Büchern,* Hamburg, 1747; for Herder, see his chapter "Von der Aehnlichkeit der mittlern englischen und deutschen Dichtkunst," first published in the *Deutschen Museum* (1777).

[18] See Ramler's biography appended to his *Poetischen Werken,* II, 314. Berlin, 1801.

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such as Handel's *Alexander's Feast* and his *Messiah,* and the compositions of Gluck[19] and Mozart.[20] The latter rescored *Alexander's Feast* in 1790.

Undoubtedly the translation of favorable English criticism of *Alexander's Feast* also greatly aided the reception accorded Dryden's odes, and hastened their translation in Germany. Most of this criticism was incidental in connection with Pope, whose popularity was then at its greatest height in Germany. These translations and reviews of them were made by Drollinger, Gottsched, the *Britischen Bibliothek,.* Mendelssohn, and Nicolai. Drollinger's translation of the *Essay on Criticism,* containing the eulogy of *Alexander's Feast,* was published by Bodmer in 1741.[21] Pope regarded the ode as an illustration of real poetry, which stirs and moves us. In the words of Drollinger's translation: "Höre die veränderlichen Thöne des Thimotheus, wie sie uns rühren, wie sie den Begierden gebieten, wechselweise zu steigen und zu fallen. Man schauet den Sohn des Lybischen Jupiters nach jeder Tonveränderung bald brennend von Ruhmbegierde, bald weich von Liebe. Aus seinem wilden Blicken funkeln jzt Wuth und Rasen, und jzt bricht er in Seufzer aus, und zerschmelzt in Thränen. Perser und Griechen finden gleiche Regungen bey sich, und den Weltbezwinger bezwingen die Thöne. Noch jzo müssen alle Herzen die Macht der Musik bekennen, und was einst ein Thimotheus war, ist jzt ein Dryden."[22] Apparently Drollinger was inspired by this criticism to also write a Saint Cecelia ode, for which he chose the same title used by Pope, *Auf die Musik,* and at least the opening lines show similarity:

> "Auf, rühret euch ihr muntern Saeten,
> Und flammet meine Geister an,

[19] Gluck also planned a composition of *Alexander's Feast.* See Otto Jahn's *Gesammelte Aufsätze über Musik,* p. 227, Leipzig, 1867.

[20] *Dictionary of Music and Musicians,* p. 52, New York, 1890.

[21] *Critische Schriften,* I, pp. 49–84. It is reedited with notes by Johann Jakob Spreng in *Herrn Carl Drollingers Gedichte, samt ander dazu gehörigen Stücken.* Franckfurt am Main, 1745. Drollinger made the translation at least two years before it was first published. See letter to Gottsched, dated March 12, 1739, in *Gedichte,* p. 327.

[22] Loco citato, I, p. 69.

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Damit ich euren Trefflichkeiten,
Ein würdigs Opfer bringen kan."[23]

It is also quite probable that he knew Dryden's ode, for he would not be apt to translate the eulogy of *Alexander's Feast,* and then write an ode to music without consulting that of Dryden.

Gottsched's review of the work of Ayers on Pope[24] indicates the interest in the Saint Cecelia odes, and Pope's intimate connection with the introduction of *Alexander's Feast* into Germany. It concludes with the statement: "Allein es zeigte sich, dass er [Pope] kein so guter Kenner, derer zur Musik sich schickenden Wörter war, als Dryden gewesen."[25]

The *Essay* of Warton was more widely disseminated in Germany than any other English criticism of *Alexander's Feast.* The *Brittische Bibliothek,* published at Leipzig in 1757 and following, in reviewing the *Essay* says: "Das Fest des Alexanders, ein Gedicht von Dryden ist das beste lyrische Stück der Engländer. . . . er [der Verfasser] bedauert zugleich, dass Popens Ode nicht ebensowohl als Drydens von Handeln in Noten gesetzt sei."[26]

Mendelssohn published an extensive review of Warton's *Essay* in the *Bibliothek des schönen Wissenschaften* wherein he discusses Dryden's odes. Of the second he says: "Drydens Alexanders Fest hält er [Warton] für das vortrefflichste unter den neuern lyrischen Gedichten, und räumt der popischen Ode auf die Musik die zwote Stelle nach diesem Gedichte ein."[27]

[23] Loco citato, p. 78.

[24] *Memoirs of the Life and Writings of Alexander Pope,* 2 vols., London, 1745.

[25] *Neuer Büchersaal der schönen Wissenschaften und freyen Künste,* I, p. 142, Leipzig, 1745.

[26] II, 377 (1757). The *Brittische Bibliothek* also points out the favorable reception of Handel's composition in connection with the "Life of Handel" published in the *Gentleman's Magazine* for April and May, 1760. "Kurz nach seiner Zurueckkunft (to London from the Baths at Aachen in 1736) wurde sein Fest des Alexanders in Covington-Garden aufgeführt und wohlaufgenommen," V, 201, 1760. Again in reviewing the *Skeiches; or Essays on various subjects* by Temple published in London in 1759, the harmonious verses of Dryden are commended. "Dryden's Verse hätten mehr Harmonie, als jemals Verse gehabt hätten." IV, p. 591, 1759.

[27] IV, p. 314, 1758.

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In 1763 Nicolai, the co-worker of Mendelssohn and Lessing, made a literal translation without comment of Warton's *Essay*, which he published in the "Sammlung der vermischten Schriften."[28] His prominent position as editor of the *Bibliothek*, as critic and publisher, assured the translation of the *Essay* a wide circulation among German scholars. It is significant to note, as we shall see, that the translation of the ode of Dryden was also published in 1763.

Four years previously Nicolai had translated the *Essay on Lyrical Poetry*[29] by Young to whom Warton dedicated his *Essay*. Young took a national pride in Dryden's ode which Nicolai translated as follows: "Allein nach dem allem muss ich zur Ehre unsres Vaterlandes noch hinzusetzen, dass, nach meinem Urtheil, des Drydens Ode auf den Tag der heiligen Cäcilia keiner Arbeit von dieser Art etwas nachgebe. Ihre vornehmste Schönheit besteht darinnen, dass sie einen Sylbenmass hat, welches auf das Glücklichste zur Abwechslung der Umstände gewählt ist."[30]

C. Translations of Alexander's Feast

During the eighteenth century *Alexander's Feast* was translated in Germany by Weisse, Ramler, Kosegarten, Nöldeke, and T—r, followed by many other translators at the beginning of the nineteenth. Weisse's translation was published in the "Anhang" of his *Schertzhaften Lieder*[31] in 1763, together with the translations of the Cecelia odes of Pope and Congreve. His esteem for Dryden is intimated in his review of Brown's ode, *The Cure of Saul*, an imitation of *Alexander's Feast*, which likewise appeared in 1763. "Die Erfindung, Die Heilung Sauls betietelt, wäre der Ausführung eines Dryden wohl würdig gewesen, da sie unter des V. (Verfassers) Händen mittelmässig gerathen ist."[32]

Ramler made two translations of Dryden's ode which were

[28] Friedrich Nicolai, *Sammlung der vermischten Schriften*, VI, p. 1–end. Berlin, 1763.

[29] Loco citato, II, pp. 206–219.

[30] Ibid., p. 214.

[31] The text at my disposal was the *Kleine lyrische Gedichte*, III, pp. 157–172, published at Leipzig in 1772.

[32] *Bibliothek der schönen Wissenschaften*, X, p. 175.

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printed in 1766 and 1770 respectively. The second translation was a revision of the first and was included in his *Lyrischen Gedichten*[33] in 1772 and in subsequent editions of his works. The first was set to music by Krause who modernized Handel's composition. The revised translation was said to have been made at the request of Princess Amalia, a sister of Frederick II, who desired a German text for Handel's music.[34] It was performed a number of times at Berlin.

Kosegarten (1758–1818) won recognition as a lyricist through his three volumes of rhapsodies, including many translations of English lyrics. The third volume of the rhapsodies contained among others, translations of the Saint Cecelia odes of Dryden, Pope, and Congreve, previously translated by Weisse, to which he also added Smart's ode on the same theme.[35] Kosegarten's translation of *Alexander's Feast,* however, had already been published by Schiller in the "Musenalmanach" for the year 1800.[36]

In the same year the translation of Nöldeke and that of the anonymous T—r were published in the "Neuen Teutschen Merkur," edited by Wieland.[37] That Dryden's ode had gained its greatest popularity at the beginning of the nineteenth century is evident from the close succession in which new translations were published, for it also appeared at Zürich in 1805,[38] and again at Vienna in 1812.[39]

[33] Karl Wilhelm Ramler, *Lyrische Gedichte,* pp. 303–316. Berlin, 1772. For the separate translations of 1766 and 1770 see *Goedeke,* IV, p. 101. The texts at my disposal were the reprint in C. D. Edeling's *Hamburgischen Unterhaltungen,* X, pp. 83–89. Hamburg, 1770; Ramler's 1772 edition just cited, and his *Poetische Werke,* II, pp. 49–55. Berlin, 1801.

[34] See "Anmerkungen" to Ramler's translation in *Poetische Werke,* II, p. 272. Edeling in a note to the text mentions Krause's composition.

[35] *Rhapsodieen von Ludwig Theobul Kosegarten,* III, p. 5 ff. Leipzig, 1801. The first volume appeared 1790.

[36] *Musen-Almanach für das Jahr 1800. herausgegeben von Schiller,* pp. 185–198, Tübingen.

[37] *Der neue teutsche Merkur,* 10. Stücke, pp. 81–93, Oktober, 1800.

[38] "Die drei Hymnen auf den Cäcilientag von P. [ope], Congreve und Dryden mit metr. Treue aus dem Engl. übrs.: *Isis Mtssch. usw.*" Zürich, 1805. März S. 193/210. See *Goedeke,* VII, p. 716.

[39] *Dichtungen der Britten in metr. Übersetzungen von Johann Baptist*

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4. Comparison of the Translations

Before taking up the comparison of the translations of the Ode, Dryden's versification will be analyzed in brief. Throughout the verse is irregular in rhyme and meter, but the rhymed couplet and the iambic tetrameter predominate. The meter varies in length from two to seven feet; in the two, three, and four foot verses the iambus, trochee, and anapest are employed, while in the five, six, and seven foot measures only the iambus appears, but there are comparatively few of these longer verses. As was his custom, Dryden interspersed the rhymed couplet with triplets; here and there the alternating rhyme is substituted for the couplets.

In their translations of Dryden's ode Weisse and Ramler followed the original rather closely in thought, but Kosegarten frequently deviated from the source according to his fancy. While differing from each other, these three translations embodied the spirit of the original and the characteristics of each translator as a lyricist. Weisse imitated Dryden in a general way in both rhyme and meter, but often varied the number of feet in a verse. Although Ramler had the groundwork of Weisse to build on and discarded the rhyme, his task was more difficult, since he followed the original absolutely in the number of feet in order to adapt it to Handel's music. Kosegarten worked independently of the original, using blank verse interspersed with passages in rhyme. Dryden's 141 verses Weisse expanded into 148, Kosegarten into 183, while Ramler naturally kept the original number. The translations of Nöldeke and T—r lacked the poetic finish of the other three, but that of Nöldeke was far superior to that of T—r. Both endeavored to follow Dryden in rhyme and meter; in rhyme Nöldeke more nearly approached him than any of the others and both retained approximately the same number of lines found in the original.

D. German Criticism of the Original and the Translations

Both the original and translations of *Alexander's Feast* called

Rupprecht. Erster Bd. Wien, 1812. The title is: "Alexanders Fest, oder die Gewalt der Musik, eine Ode zu Ehren des St. Cäcilien-Tages," S. 392/400. *Goedeke,* VII, p. 699.

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forth criticism in Germany from such poets as Hagedorn, Herder, Eschenburg, Boie, Schubart, and Böttiger. Hagedorn, who had traveled in England, was familiar with Dryden, Waller, Sidney, Addison and Prior, and was an ardent admirer of Pope and at every opportune occasion commends or quotes from his works. In the foreword to his odes he discusses the beauty of the irregular verse of Homer and other classicists to which he adds: "Von gleicher Beschaffenheit sind die fürtrefflichen Oden des Dryden, Congreve, Addison, und vor allen andern, des Pope auf das Fest der heiligen Caecilia."[40]

No other German critic has so frequently and thoroughly criticized *Alexander's Feast* as Herder. His interest for Dryden's ode grew out of his natural inclination for poetic enthusiasm such as he found expressed in this ode, his fondness for varying rhyme and meter, and his esteem for Saint Cecelia and Handel. Two years after Ramler's translation, when he was just beginning his career and Hamann had but introduced him to Shakespere and Ossian, Herder cites the ode in the *Fragmente,* in discussing the advisability of the Germans adopting the harmonious meter of the English, which Hagedorn had already commended. While he did not entirely agree with Lessing's disapproval of descriptive poetry, he maintained that Brockes and others had over-stressed natural description. He believed in "Wohllaut" in poetry, but it must have life and move the emotions by clearly visualizing. "Man laufe die Reihe dieser Klageworte durch; oder besser man empfinde den Wohllaut derselben in unsern Dichtern, die nicht schrieben sondern sangen, unter welchen ich Klopstock, Hagedorn, von Gerstenberg, und in seinen Kantaten auch Rammlern, besonders nenne: man gehe z. E. die Uebersetzung durch, die der letzte von Drydens Ode auf die Musik geliefert, alsdenn errinnere man sich, wie weit Brockes und andere diesen lebendigen Wohlklang haben übertreiben können, und man wird, wie ich hoffe, nicht mehr an der malenden Musik zweifeln."[41]

In the *Zerstreuten Blättern* Herder has a chapter on "Cecelia" in which he traces her legend and cites the odes of Dryden, Addi-

[40] *Oden und Lieder in fünf Büchern,* p. xxxii ff. Hamburg, 1747.
[41] *Ueber die neuere Deutsche Litteratur, Fragmente,* p. 72, Riga, 1768.

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son, Pope, Congreve, and Handel's musical composition for *Alexander's Feast* as classical masterpieces composed for her celebration.[42] At the conclusion of the chapter he adds a religious rhapsody, *Die Tonkunst*.[43]

To Herder the religious song, the hymn, was the highest and most natural expression of music and reverence; but he was not an extremist in his romanticism for the religious hymn in the sense of Klopstock, nor did his enthusiasm carry him to the extremes of a Novalis, for instance, for whom feeling was everything. In the *Adrastea* he writes: "denn Andacht, dünkt mich, ist die höchste Summe der Musik, heilige himmlische Harmonie, Ergebung und Freude. Auf diesem Wege hat die Tonkunst die schönsten Schätze erbauet, und ist zum Innersten der Kunst gelanget. . . . Die tiefste Grundlage der heiligen Musik ist wohl der Lobgesang, Hymnus; ich möchte sagen, er sei dem Menschen natürlich."[44] He does not reckon *Alexander's Feast* among the sacred odes, but says it is a worthy greeting to Saint Cecelia, because it is a melody appealing to the heart [Herzensmelodie], a national melody expressed in simple tones.

In 1780 Herder translated Pope's *Messiah*[45] for which Handel had composed an oratorio. However in the biography of Handel he ranked the composition for *Alexander's Feast* the greatest and most enduring of all his compositions. "Alexanders Fest, das er nach seiner Rückkunft (von Aachen) gab, schaffte ihm nicht nur die Gunst der Nation wieder, sondern wurde auch den Grundstein seines bleibenden Ruhmes; denn seine Opern und Sonaten sind verhallet. Sein Alexanders Fest dauert."[46]

Interwoven in the biography of Handel is a characterization of the genuine ode and lyric which Herder links with music. *Alexander's Feast,* called forth by the patron saint of music, in his opinion complies with the requirements of a great ode and is superior

[42] *Zerstreute Blätter von J. G. Herder,* V, 289–326, Gotha, 1793.

[43] The first refrain runs:

"Ewige Harmonie! Kling' ein in meine Saiten.
Heilige Harmonie! Kling ein in meine Seele."

[44] Loco citato, p. 295.

[45] *Gothaische gelehrte Zeitung,* VII, 255. 1780.

[46] *Adrastea,* III, 319–349.

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to all others dedicated to her. "Jede wahre Ode sollte ein solcher Flug der Phantasie und Empfindung seyn, die bald wie ein Adler aufstrebt und scwebt, oder niederfährt und ergreift; bald wie eine Taube girrt, und wie die Nachtigall schmettert. Am zarten Faden der Empfindung, oder am rastlosen Gange der Gedanken und Gefühle hangt der Zauber der lyrischen Poesie, den in allen seinen Wendungen die Musik mit allen ihren Modulationen begleitet. Ueber eine ode solcher Art, Alexanders Fest, breitete sich Handels Geist aus; andere von andern Dichtern, Pope, Congreve, Gray, Smart u. f. sind ihr gefolget."[47]

In differentiating between spurious and genuine musical description in poetry, Herder analyses and compares the Saint Cecelia odes of Pope and Dryden. The harmonious lines in Pope's ode,

> "Dreadful gleams,
> Dismal screams,
> Fires that glow,
> Shrieks of woe . . . ,"

and the entire first stanza are to him only pictures and imitations of sounds and tones which do not vivify our emotions. On the other hand Dryden's "None but the brave" etc. expresses a national feeling, and the falling of Darius, the powerful monarch of the earth moves us to pity, so that we see, hear, feel, and mourn, forgetting the medium of sound and language. In Herder's own excellent translation of this passage:

> "fällt, fällt, fällt,
> Von seiner Höhe fällt,
> Und liegt im Blut.
> Verlassen in der letzten Noth
> Von allen, die sein Herz geliebt,
> Auf kaltem Boden hingestreckt
> Ohn' einen Freund, der ihm das Auge schlieszt."[48]

Herder never directly mentions Weisse's translation of *Alexander's Feast,* but as already noted, pays a tribute to that made by Ramler, and reviews that of Kosegarten in connection with the

[47] Ibid., 332 ff.
[48] *Adrastea,* loco citato, p. 339.

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third volume of his *Rhapsodies.*[49] He commends this translation since it conveys the spirit of the original, but regrets that Kosegarten deviated too far from Dryden's words which Handel had canonized with his composition, and admonishes the translator not to be too effusive and picturesque. "... die englischen Gedichte, die den grössten Teil (of the "Rhapsodies" III) ausmachen, sind mit gleichem Geist in unsere Sprache nicht so wohl uebersetzt, als im Hauch uebertragen. Die vier prächtigen Lobgesänge auf die Tonkunst, auf welche die Britten stolz sind, Alexanders Fest von Dryden, Congreves Hymnus an die Harmonie, Popes and Smarts oden am Cäcilienfest machen den Anfang. Die drei ersten waren ins deutsche, einige mehrmals übersetzt. ... Bey der ersten werden es manche bedaurn, dass sich der deutsche Wortbau hie und da etwas zu weit von der Ursprache entfernte, in der Händel fast jedes Wort, jeden Einschnitt des Rhythmus canonisiert hat. ... Auch der süszesten Worte lass nicht zu viel sein."[50]

Like Herder Eschenburg was greatly interested in English literature as is shown by his translation of Shakespere, his *Beispielsammlung* and criticism of English works. He received a copy of Dryden from Lessing in 1776.[51] His translation of Brown's work on poetry and music mentions in a note the translations of *Alexander's Feast* by Weisse and Ramler. "Eine glückliche Uebersetzung dieser zwo berühmten Oden hat uns Hr. Weisse in dem Anhang seiner scherzhaften Lieder geliefert. Die Uebersetzung von Alexanders Fest ist durch Hr. Ramler so eingerichtet, dass sie der Handlischen Musik kann unterlegt werden und so in Berlin aufgeführt und einzeln abgedruckt."[52] It is significant that Eschenburg mentions Weisse's translation which Herder had not done. In the *Beispielsammlung* he gives Dryden a high rank as a lyricist. "Man kennt seine Stärke in der höhern Ode aus dem Alexanders Feste";[53] and in discussing the Kantaten he seems to have combined the praise of Young, Warton, and Pope in his

[49] Loco citato, III, p. 5 ff., 1801. For the review see *Hempel,* XVII, p. 670.

[50] See Dünzer's note in *Hempel,* loco citato.

[51] See letter of Lessing to Eschenburg, dated Dec. 20, 1776.

[52] *Betrachtungen ueber Poesie und Musik,* p. 384, 1769.

[53] Loco citato, V, p. 61.

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tribute to Dryden's ode: "Seine gleichfalls für den Cäcilientag bestimmte musikalische ode, Alexander's Feast, ist einer, der herrlichsten Meisterstücke der neuern Poesie; reich an zaubervoller Mannigfaltigkeit der Bilder und Beschreibungen, an Schönheit und Wohlklang des Ausdrucks, und am wirkungsvollsten Wechsel der Empfindung. . . . Gar sehr aber übertraf er sich selbst, und alle seine Vorgänger und Nachfolger, in gegenwärtiger ode, die Pope in seinem Essay an Criticism sehr treffend charakterisiert. . . . Uebrigens weiss man dass Händel im Jahre 1735, (date is 1736) dies Meisterstück in eben so meisterhafte Musik setzte; und dass wir es Hr. Ramler zu verdanken haben, der einen deutschen Text mit Grundlage der Weissischen Uebersetzung, zu dieser Komposition einrichtete, dass diese letztere auch in Deutschland bekannter geworden, und mehrmals von Kennern bewundert ist."[54] The English text now follows. Eschenburg's criticism contributed to the awakening of new interest in the ode a decade before the close of the century.

Among the other criticisms of *Alexander's Feast* those by Boie, Schubart, and Böttiger are the most significant. In 1771 Boie reviewed Ramler's second translation of Dryden's ode in the *Almenach der deutschen Musen,* the organ of the "Dichterbund." Naturally the members of this union were enthusiastic for the lyric and the ode. In the review Boie says: "Schon lange ist Ramlers vortreffliche Uebersetzung der nie genug zu bewundernde Ode von Dryden den Liebhabern bekannt gewesen, hier erscheint sie aufs neue einzeln gedruckt, und Zeile für Zeile meisterhaft gebessert. Drydens Geist ist in eine so feurige und körnigte und harmonische Sprache uebertragen, dass man diese einem Original gleich schätzen musz."[55]

Schubart, the journalist, musician, and lyricist, was the author of a number of cantatas, but bewailed the lack of religious cantatas among the Germans. "Die wahre geistliche Kantata ist beinahe noch unbearbeitet (among the Germans) wie schon Herder und Goethe bemerkt haben. Freilich keinen Dryden, keine Cäzilia-

[54] Loco citato, VI, p. 373, 1791.
[55] *Almanach der deutschen Musen,* p. 106, 1771.

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oden haben wir; aber doch köstliche Oratorien von Niemeier und Sangstücke von Kosegarten."[56]

B. (öttiger), associate editor of the *Neuen Teutschen Merkur*, in a comment to the two translations of *Alexander's Feast* published in that journal, voices the general esteem and the popularity of the translations, and even of the original of Dryden's ode at the beginning of the nineteenth century. "Es gibt gewisse Meisterstücke der Verkunst, durch deren treue Uebertragungen in andere Sprachen fast jeder wahre Künstler von jeher sein Studium machte. . . . Wer hat nicht z. B. die Ode der Saffo von der Gewalt der Liebe, oder Petrarchas Sonet auf Baucluse einmal wenigstens seiner geheimen Tafel in einer Uebertragungsversuch anvertraut? Ein solch oft versuchtes Stück ist auch Drydens berühmte Ode auf das Cäcilienfest. . . . Das Original ist aus Retzer's *Choice*[57] oder jeder andern nur erträglichen Chrestomathie in jedermanns Händen."[58]

The other criticism, though not so important and for the most part not original, indicates the general recognition of *Alexander's Feast* in the eighteenth century. Schmid speaks of the renowned ode of Dryden, and mentions the happy translation which Weisse made, apparently ignorant of that made by Ramler.[59] Flögel says that Dryden's genius and phantasy seemed to become more active in his old age, for in his sixty-eighth year he wrote the ode for Saint Cecelia's Day which was regarded as the most perfect in all languages.[60] Blankenburg says it is known among the Germans through the translations of Weisse and Ramler, and calls it an excellent poem but criticises the close.[61] Bouterwek pronounces it a widely known and much admired ode; a masterpiece for its

[56] (C. D. F.) *Schubarts Leben und Gesinnung von ihm selbst im Kerker aufgesetzt. Herausgegeben von seinem Sohne, Ludwig Schubart.* II, p. 30. Stuttgart, 1793.

[57] I did not have access to Retzer's *Choice of the best Poetical Pieces.* Vienna, 1783 ff. See *N. T. Merkur,* Vol. 54, p. lxxxvii.

[58] Loco citato, p. 81.

[59] *Theorie,* loco citato, II, p. 367.

[60] Loco citato, II, p. 367, 1785.

[61] *Zusätze,* II, p. 443a, 1796.

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kind without a model in the early English literature, which won the favor of those who did not prize Dryden's fables.[62]

In a few instances the interest in Dryden in other European countries is so closely related to Germany as to warrant brief consideration. Simultaneously with Ramler's first translation of *Alexander's Feast,* a French translation in verse appeared in Paris.[63] Since the French translator included this in his collection of Gessner's pastorals and Haller's poems, it would inevitably attract the attention of the Germans.

The close relation of Voltaire to Germany, and the high esteem in which he was held by Frederick the Great and by the German scholars and critics made his criticism potent in that country. Contrary to his neighbor critics he did not give Pope the first rank, but regarded Dryden superior to all English poets and equal to all ancient.[64]

Like the Germans Voltaire greatly esteemed the ode, and his enthusiasm for *Alexander's Feast* even surpassed that of Eschenburg and Herder.[65] In his estimation it was superior to that of Pope and all modern odes, and a hundred times more admirable than all of Pindar.[66]

[62] Loco citato, VIII, pp. 34 and 51, 1810.

[63] "Traduction libri de l'ode—sur le pouvoir de la Musique; ou la Fête d'Alexandre, en l'honneur de Sainte Cécile." See *Brit. Mu. Cat.* under Dryden and Gessner (S).

[64] "Ses [Dryden's] ouvrages sont plein de détails naturals à la fois et brillians, animés, vigoureux, hardis, passiones, merite qu'aucum poëte de sa nation n'égale, et qu'aucun ancien n'a surpassé. Si Pope, qui est venu aprés lui, n'avait pas, sur la fin de sa vie fait son Essai sur l'homme, il ne serait pas comparable à Dryden." See "Siècle de Louis XIV" in *Oeuvres Complètes de Voltaire,* Tome, XXIV, p. 248. De L'Imprimere de La Société Littéraire-Typographique, 1785.

[65] "De contes les odes modernes, celle oú il règne le plus enthusiasme qui ne s'affaibloit jamais, et qui ne tombe ni dans le faux, ni dans l'ampoulé, est le Timothée, ou la Fête d'Alexandre par Dryden: elle est encore regardée en Angleterre comme un chef-d'oeuvre inimitable, dont Pope n'a pu approcher, quand il a voulu s'exercer dans le même genre. Cette ode fut chantée; et si on avait en un musicien digne du poëte, ce serait le chef-d'oeuvre de la poésie lyrique." See the chapter on enthusiasm in *Dictionnaire Philosophique,* loco citato, LI, p. 48.

[66] "Vous appelez Cowley le Pindare anglais; . . . . Le vrai Pindare est

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Voltaire was quoted on Dryden's ode by the *Göttingischen Anzeigen* in 1786: "Seine [Dryden's] Ode Timotheus muss wohl vortrefflich sein, da sie den Beifall einer so gelehrten Nation, und, was manchen noch wichtiger erscheinen mag, Voltaires Beifall erhalten hat."[67] Strangely enough the German review is in connection with an Italian criticism, and shows that the Italians likewise had noted Dryden's ode, and that Voltaire's criticism of it was known to the Germans.

Bouterwek commends and quotes the first stanza of Aranjo de Azavedo's Portuguese translation of *Alexander's Feast,* which was published along with the English text at Hamburg in 1799.[68] "Seine vortrefflichen Uebersetzungen des Alexander-festes von Dryden, einiger Oden von Gray, und der bekannten Elegy of a Country Church von demselben Dichter sind seine wahre Bereicherung der Portugiesischen Nationallitteratur."[69]

Even in the nineteenth century the ode of Dryden was perpetuated through the many performances of Handel's music. In his letters to Goethe Seltner often speaks of the beauty of Handel's composition;[70] and finally the Handel Societies organized in England and in Germany in the nineteenth century have published standard editions of Handel's composition, accompanied with the

Dryden, auteur de cette belle ode intitulée La Fête d'Alexandre et Timothée. Cette ode, mise en musique par Purcell (si je ne me trompe) passe en Angleterre pour le chef-d'oeuvre de la poésie la plus sublime et plus variée; et je vous avoue que, comme je sais mieux l'anglais que le grec; j'aime cent fois mieux cette ode qui tout Pindare." See letter written to Chabanon, dated March 9th, 1772. Loco citato, LXXXI, p. 268.

It seems strange that Voltaire was ignorant of the fact that Handel had set the ode to music.

[67] Loco citato, p. 1042.

[68] For the original title, etc., again see *British Museum Catalogue* under Dryden, p. 47.

[69] Loco citato, IV, p. 394. 1804.

[70] *Briefwechsel zwischen Goethe und Zeltner in den Jahren 1796 bis 1832. Herausgegeben von Friedrich Wilhelm Riemer,* 6 volumes. Berlin, 1833. Zeltner mentions it in letters number 109, 112, 362, 425, and 788. Together they planned a cantata for a Luther celebration, and in the sketch drawn up by Goethe he says that Handel's *Alexander's Feast* served as a model. See No. 277, Goethe's letter to Zeltner, which contains the sketch.

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text of Dryden, which will aid in perpetuating the composer and lyricist.

2. The Relation of Dryden's Other Lyrics to Germany

The other lyrics of Dryden show comparatively little relation to Germany, save the first Cecelia ode, *A song for Saint Cecelia's Day*. On the whole this ode lacks the virility of *Alexander's Feast*, and with the exception of the first two and the last stanzas is either descriptive or imitative of the sounds of instruments, as lines 25–28:

> "The trumpets loud clangor
> Excites us to arms
> What shrill notes of anger
> And mortal alarms."

It was the popularity of the second Saint Cecelia ode of Dryden that brought the first to the attention of the Germans, just as the success of the composition for the second induced Handel to set the first to music in 1739.

In a footnote in his *Essay*,[71] Warton published the second stanza which induced Mendelssohn to say: "Unser Verfasser . . . führt bei dieser Gelegenheit in einer Note eine Strophe aus einem unbekannt gewordenen Gedichte von Dryden auf die Musik an, die wir ihrer vorzüglichen Schönheit halber hierher setzen wollen."[72] He not only published the original of the stanza but also made a translation. Nicolai also included this in his translation of the *Essay*,[73] but the superiority of Mendelssohn's translation is very apparent when compared with that of Nicolai.

Mendelssohn.

"Wie mächtig kann die Tonkunst das Gemüth bewegen!
Als Jubals Saitenspiel erklang,
Da horchten um ihn seine Brüder,
Und fielen auf ihr Antlitz'nieder,
Vor diesem himmlischen Gesang;
Ein Gott, so dachten sie, muss sich hierinnen regen;

[71] Loco citato, I, p. 52.
[72] Loco citato, IV, p. 513. 1758.
[73] Loco citato, VI, p. 53. 1763.

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Denn sieh! Das Zauberwerk ist hohl,
Das so begeisternd sprach, so wohl.
Wie mächtig kann die Tonkunst das Gemüth bewegen"!

Nicolai.

"Was für Affekt kann die Musik nicht erregen und dämpfen!
Als Jubal die mit Saiten bezogene Muschel berührt,
Standen seine horchende Brüder rund um ihn staunend,
Und verwundernd fielen sie auf ihr Angesicht nieder,
Um den himmlischen Ton in tiefer Anbetung zu ehren;
Nur ein Gott, so glaubten sie, kann in der Höle der Muschel
Wohnen, nur er kann so lieblich und süsz sich mit uns unterhalten.
Was für Affekt kann die Musik nicht erregen und dämpfen"!

Both Mendelssohn and Nicolai translate the criticism of Warton in the *Essay,* that this ode is an excellent subject for an historical painting since the artist would only have to transform the words into color. It was probably the opinion of Warton expressed in the *Essay* that induced Lessing in the *Laokoon* to refer to the ode of Dryden as an illustration that musical pictures are superior to those painted with a brush. "Nun kann der Dichter zu diesem Grade der Illusion, wie die Erfahrung zeiget, auch die Vorstellung andrer als sichtbare Gegenstände erheben. Folglich müssen dem Artisten ganze Klassen von Gemälden abgehen, die der Dichter vor ihm voraus hat. Drydens Ode auf den Cäcilientag ist voller musikalischer Gemälde, die den Pinsel müssig lassen."[74]

Bürde was also greatly interested in the Saint Cecelia odes, and his ode *Die Griechische Tonkunst* has a number of the motives of Dryden's ode, but I think Koch is hardly warranted in calling it a translation of the first Saint Cecelia ode of Dryden, since in subject matter, in arrangement, and in form it differs from Dryden.[75] The second stanza runs:

"Ich seh den Aether sich erhellen;
Die Schöpfung schwimmt in neuem Purpurlicht.
Ein Jubal steigt, und tausend Stimmen schwellen.
Die weite Luft, gedrängt in hohen Wellen;
Wie auf dem Ocean sich Wog'an Woge bricht."[76]

[74] *Lessings Werke,* IX, part I, p. 90, D. N. L.
[75] *Stud. zur verg. Litteraturgeschichte, Ergänzungsheft,* p. 38, 1905.
[76] Published in Schiller's *Neue Thalia,* III, pp. 47–50. Leipzig, 1793.

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Two other odes by Bürde are published in Schiller's *Horen,*[77] the first, *An Cecilia,* begins: "Wenn ich deine Zauberstimme höre"; the second, *Der neue Orpheus* "Heil euch süsse Harmonien."

The remaining reviews of Dryden's first Cecelia ode are connected with the discussion of *Alexander's Feast* and appear near the end of the eighteenth century. The *Göttingische Anzeigen von Gelehrten Sachen* pronounces it rather flimsy and too artificial;[78] in his *Beispielsammlung* Eschenburg commends the very beautiful passages it contains;[79] Blankenburg calls it "eine ganz gute Ode";[80] and Bouterwek, who prints the first stanza in English, commends the beginning and the conclusion.[81]

The lines dedicated to Milton and printed under his picture in which Dryden attributes the genius of Homer and Virgil to the English poet was imitated and translated in Germany. Before he knew English,[82] Gottsched quotes then in the *Critischen Dichtkunst*[83] from the *Spectator* to show the greatness of Milton, as the feud between him and Bodmer had not yet begun. Two years later Bodmer translated and published it in the preface to the first translation of *Paradise Lost.*

> "Drey Dichter hat die Zeit hervor gebracht,
> Der Griechen Zier, der Römer und der Britten;
> Im ersten herrscht Erhabenheit und Macht;
> Im andern Schönheit; beides in dem Dritten.
> Als die Natur nicht weiter konte gehn,
> Vereinte sie im Letztern jene Zween."

Kasper Gottl. Lindner wrote a treatise on the life and works of Martin Opitz in 1740, and in the dedication he imitates Dryden's tribute to Milton.

[77] VI, Stück 6, p. 102, Tübingen, 1796.
[78] For the year 1786, p. 1046.
[79] Loco citato, VI, p. 373, 1791.
[80] Loco citato, II, p. 443a, 1793.
[81] Loco citato, VIII, p. 51, 1810.
[82] The two lines he quotes as follows:

> "The force of Nature could no further go
> To moke a third, she joined the former two."

[83] Loco citato, p. 177, 1741.

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"Was einst Horaz, Homer, Virgil und Pindar war,
Das stellt uns Schlesien in dem Opitz dar."

Gottsched reviewed the work and would have it read:[84]

"Was Hesiod, Horaz, Petrarch und Ronsard war,
Und Spenzer noch dazu, das stellt uns Opitz dar."

Of the other lyrics of Dryden his *Roundelay* (1693) was translated and published in the *Neuen Wiener Musenalmanach* in the year 1800.[85] Nicolai also translated the last eight lines of the poem dedicated to the painter, Sir Godfrey Kneller, which he found in Warton's *Essay*.[86] The poem written at the death of Mrs. Killigrew, Eschenburg pronounces a beautiful lyrical poem, and adds that in the lighter lyrical songs Dryden was successful, which he exemplifies by adding the English text of his *A Song*.[87] Blankenburg regards the *Ode to Mrs. Killigrew*[88] one of the best English odes. Bouterwek believes that Dryden was not a lyricist who really sang from the fullness of his heart, but at times was in a happy lyrical mood, and pronounced the poems written in a lighter vein "vortrefflich."[89]

Notwithstanding the fact that Dryden no longer ranks as a great lyricist in England and Germany, it cannot be denied that in the eighteenth century he was ranked by both English and German critics as a lyricist of the first magnitude. The popularity of *Alexander's Feast* in England, upon which the fame of Dryden as a lyricist primarily rests, paved the way for his popularity in Germany. The change in the nature of German poetry, the revival of folk-songs and music, and the translation of favorable English criticism of Dryden during the second half of the century, also accounts for his cordial reception. The favorable attitude of the German critics, and the numerous translations convince us that Dryden's lyrics combined with Handel's musical compositions

[84] *Critische Beyträge*, IV, part 1, p. 514, Leipzig, 1741.
[85] See *Goedeke*, VII, p. 703.
[86] *Gesammelte Schriften*, VI, 1763.
[87] Loco citato, V, p. 61, 1790.
[88] Loco citato, II, p. 446a, 1796.
[89] Loco citato, VIII, p. 51, 1810.

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played a part in shaping the lyrical poetry of Germany during the eighteenth century.

Conclusion

In this study it has been shown that Dryden, unlike Pope, was first introduced into Germany directly from England. At Hamburg *Mac Flecknoe* was translated and adapted early in *Hans Sachs*. *Hans Sachs* fostered literary cliques, and as a result there was introduced into Germany a direct personal literary criticism. Later it was revived by Bodmer and utilized in the Swiss-Gottsched controversy. The other satires of Dryden were not closely related to Germany, but the *Treatise on the Origin and Progress of the Satire* was translated by Nicolai, and accepted as a guide.

While early noted by German critics the *Essay on Dramatic Poesie,* however, was not introduced into Germany until after the partial French translation, which Gottsched in turn translated. Although Lessing learned to know Dryden through Voltaire's *Lettres,* Gottsched's translation induced him to translate the *Essay*. His translation proved the fallacy of Gottsched's contention, that Dryden preferred the French theater to the English. The *Essay* also influenced Lessing's utterances in the seventeenth *Literaturbrief,* as is shown by the external and internal evidence. Lessing's translation won recognition for it in Germany.

The relation of Dryden's plays to Germany is not so consequential as that of his satires and the *Essay on Dramatic Poesie;* nevertheless four of his plays were translated. *The State of Innocence* and *All for Love* played the most prominent part; the former at Zürich, and the latter at Mannheim. *The State of Innocence* was introduced as a companion piece of *Paradise Lost;* and *All for Love* found its way into Germany because of its connection with Shakspere's *Antony and Cleopatra,* and became Dryden's most widely disseminated play.

The fables and poetic-classical translations of Dryden owe their popularity in Germany to their elegant form. This characteristic of Dryden's fables exerted an influence upon Hagedorn, and caused him to follow this elegance of form in his own poetry.

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Hagedorn even used *Philemon and Baucis* as a source for a fable. In addition to *Philemon and Baucis* there were translated *The Cock and the Fox*, and *Theodore and Honoria*. The relation of Dryden's fables to Germany was not limited to one literary center, nor to one period of time. The poetic-classical translations, particularly that of Virgil, found admiration in Germany during the greater part of the century.

As a lyricist Dryden was esteemed in both England and Germany during the eighteenth century. His fame as a lyricist rests primarily on *Alexander's Feast*. Its popularity in England also gave it popularity in Germany. The change in the nature of German poetry during the latter half of the eighteenth century also accounts for its cordial reception, as the descriptive and rationalistic literary currents gave way to the enthusiasm for folk-songs and lyrics. The favorable criticism of recognized critics and translations by renowned poets, combined with Handel's musical compositions, made Dryden a factor in shaping the lyrical poetry of Germany.

Although not all the translations of Dryden faithfully interpret the English author, and Dryden at no time, and in no particular literary center was as prominent as Shakspere, Pope, and Young, nevertheless the recognition in the numerous fields of poetry, and his wide dissemination in Germany during the eighteenth century prove that his relation to Germany was of considerable importance.

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II.—DRAMATIC ELEMENTS IN AMERICAN INDIAN CEREMONIALS

By Virginia Shropshire Heath

"Poetry in general," says Aristotle, "seems to have sprung from two causes, each of them lying deep in our nature—first, the instinct of imitation . . ., next, . . . the instinct for 'harmony' and 'rhythm.'" Many of the lyric-legend-dance complexes of certain North American Indian religious ceremonials would seem to bear out this judgment. Indeed, in not a few of the unmistakably poetic expressions, there may be found well-defined dramatic elements suggesting the possibility of a developed, independent dramatic literature, had these savage peoples been left alone to initiate a civilization and culture of their own. The South American Indians were capable of evolving a secular form of drama, as Sir Clements Markham affirms on the strength of the romantic "Ollantay" of the Incas of Peru. Certainly the North American Indians, many of whom were superior in religious conceptions and practices to their more civilized kindred of the south, could have equalled if not surpassed them in the matter of dramatic expression. For the peoples of the north, the idea of religion, of genuine worship, still lay at the root of all dramatic production. Hence, out of the great admixture of savage love of song, of story, and of rhythm, heightened by religious terrors and spiritual yearnings, must be sifted the mimetic actions and speeches fundamental to the drama proper, especially to serious drama; for to the savage mind, Nature, in one conception or another, the great dispenser of the necessities as well as of the "good things" of life, is a matter of deadly earnest.

It is the red man's promise of a finished dramatic literature unaffected by the white man's tampering that constitutes my reason for investigating the ancient religious ceremonials of a

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limited number of Indian linguistic stocks.[1] The interplay of tribal influences presents complications enough in any of the religious types known among the American Indians north of Mexico. The type represented by the pueblo, the great plains, and eastern woodland peoples, alone affords dramatic material of enormous proportions. In defining this type Dr. Boas[2] says:

> The principal characteristic of the mythologies of the area of the great plains, the eastern woodlands, and the arid southwest is the tendency to a systematization of the myths under the influence of a highly developed ritual.

In this great religious attempt at the rationalization of the universe and its powers is sounded the keynote of the more distinctly human institution, dramatic art, the basic function of which is an explanation of and a judgment upon human events and human destinies.

Within the confines of this one type arise differentiations that tend to segregate the pueblo type of ceremonial from that of the plains and the eastern woodlands. Among the former, the idea of dramatic action has progressed so far as to subordinate the ritual side of the ceremonial, while among the latter the predominance of the ritual leaves comparatively small scope for the display of action. Thus, according to Mr. Miller's interpretation[3] of the essentials of the drama—namely, speech and action—within the confines of this one type of religious ceremonial appear two separate and distinct sorts of treatment. The pueblo performance would tend to degenerate into pantomime; the plains and eastern woodland ceremonial might relapse into lyric or epic recitals. But this condition of affairs is in no sense necessary. The

[1] *Iroquoian*—Seneca, Onondaga Huron; *Algonquian*—Ojibwa, Arapaho, Cheyenne; *Siouan*—Dakota, Omaha, Winnebago; *Caddoan*—Pawnee; *Shoshonean*—Hopi (Pueblo); *Athapascan*—Navajo. For geographical distribution, especially of last four stocks named, see map of linguistic families of North America—Bureau of American Ethnology, Bulletin 30, Part I, Washington, 1906.

[2] Bureau of American Ethnology, Bul. 30, art. "Religion."

[3] Miller, *Dramatic Elements in Popular Ballad;* University Studies, University of Cincinnati, 1905.

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second possibility is scarcely worth noting; for, the dramatic conception once realized, it is not likely to lose ground. Music, sung ritual, together with rhythmic motion, aside from certain stage settings, help to retain in the epic-lyric nature of the plains tribes' ceremonials, distinct dramatic features. On the other hand, the religious or ritual content is almost as generally understood by the pueblo audience as were the accepted plots of classic tragedy which were the common property of the Greek audience. Whereas the Greek went to hear the poets' ideas upon certain human situations, the Indian of the pueblo type went to see how the members of the various societies would act in the rôle of gods or other supernatural beings. From the standpoint of his savage interest, dialogue is, in the main, non-essential. Songs and musical accompaniment fulfil at least in part the general function of dialogue.

PUEBLO CEREMONIALS

Of the religious observances in which dramatic action predominates, some of the best instances may be cited among the Hopi or Moki, distinctly a pueblo people, and the Navajo, a pueblo-influenced people. Both the purely communal and the largely individual ceremonials are celebrated by each of these tribes; but for the sake of definiteness, let us first review two of the Hopi indoor performances, Katcina impersonations, as they are called, both of a communal nature; and later, take up a Navajo celebration of the individual sort.

In considering the dramatic features of ceremonials among pueblo, plains, and eastern woodland peoples, it must be remembered that sympathetic magic constitutes the very backbone of all drama-like performances. Not even among the pueblo tribes have the most spectacular of shows freed themselves from this religious content. All have as their basic purpose the influencing of supernatural powers or deities, inducing them to grant to otherwise helpless man the various good things of life—peace, plenty, and increase. The celebrations themselves conform strictly to certain fixed codes, subject to little alteration. It is this conformity to the general trend of cosmic and universal myths which in time develops what may be termed texts; for the nature and succes-

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sion of these rituals in any given ceremonial, though transmitted in most cases by word of mouth, take on all the permanent characteristics of the parts and accompanying cues of the recognized play, with the added emphasis of divinely inflicted punishment for any failure to give an accurate performance. And yet with all the fixed nature of the rituals, there is a certain latitude for individual interpetation which, little by little, becomes embodied in the form of the rituals themselves. Especially is there license of this sort among the pueblo Indians. Primarily, however, all shows are inaugurated to entertain and to propitiate a divine or supernatural audience rather than for the pleasure of the tangible body of spectators helping to create the genuinely theatrical atmosphere of inspiration.

Among the Hopi, certain of the Katcina ceremonials offer no end of interesting material for investigation, especially the so-called complete or masked Katcina performances. Those playing Katcina parts are impersonating divine beings, primarily spirits of the ancients of the Hopi, of such an order as can be represented by men. During the impersonations, the actors by virtue of their highly symbolic paraphernalia, especially masks, would seem to become the exalted beings themselves, so intense is the degree of such acting. Within certain bounds, to judge from the great diversity existing between Hopi myths and Hopi dramatic representations, both individuals and companies have possessed themselves of unexpected license in the matter of interpretation and presentation of fixed rôles. "Conservatism in dress," to quote Mr. Fewkes, "is tenaciously adhered to in religious paraphernalia among all peoples." This is as true of the purely religion-dominated performances of the American Indians as it was true of the semi-secularized dramatic plays of the Greeks.

Hopi Representations

Soyáluña

Of the elaborate or complete Katcinas, few offer better material for investigation than certain portions of the Soyáluña, the warrior's observance, sometimes called the "Return Katcina," for it

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celebrates the return of the sun, the god of war as well as the god of germination. This religious observance occurs in December at the time of the winter solstice and serves, it would seem, as a sort of invocation to the sun, an insurance of its return. There are many preliminary ceremonials, as there are in all such religious celebrations. These occur in the various *kivas*, secret society lodges, previous to the final central dramatization which takes place on the last night in the Moñkiva.

To get a clear idea of this distinctly indoor performance, imagine yourself a companion of Mr. Fewkes for the celebration of 1891 at Walpi.[4] Upon entering the *kiva* or secret society lodge through the hatchway,[5] perhaps the first thing to be noticed would be the bower effect of the ceiling, so studded is it with numerous strands of feathers and piñon needles, each strand, by the way, having played an important symbolic part in the period of preparation. At the west wall of the kiva is an altar of stacked corn flanked and fronted by a bank of shrubbery, the space between the corn pile and the roof being filled with wands ornamented with artificial flowers. In the center of the shrubbery facing east, is a gourd with an eight inch aperture through which is thrust the head of an effigy of Paliiliikoñuh, the plumed-headed snake of the type certain of the Katcinas brought with them as pets, when first they emerged upon the upper earth through the *sípapû*, or opening in the center of the earth. The head of this effigy is painted black. A tongue-like appendage hangs from its mouth. All the preliminary chants and dances, in which various kiva groups may be distinguished, each with its own type of head covering or mask, decorated with symbols of rain clouds (an almost constant prayer among these desert folk is the prayer for rain), and each with its characteristic sun-shield,—all these may be passed over for the sake of the ceremony proper which comprises a purely religious rite followed by a performance of religious import, unmistakably dramatic in character.

On the north side of the room is seated one old chief alone and,

[4] See 15th *Annual Report of the Bureau of Ethnology*, Washington, 1897.

[5] See Pl. IV, 19th *A. R. B. E.*, Washington, 1898. The pueblo kiva is underground, hence the hatchway.

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opposite him on the south, sit twelve chiefs, the floor space between being clear. The gorgeously arrayed novices from the various other kivas, each carrying imitation squash blossoms and spruce twigs in the left hand and corn in the right, approaching the twelve chiefs over an especially strewn path of sand, squat before them, facing south. The old chief on the north crosses the room and takes his seat at the east of the line of chiefs. When all are assembled, kiva members and outside spectators standing against the eastern wall, the priests take their places before the altar. After a moment of intensely solemn quiet, the officiating priest casts a handful of meal towards the effigy and says a short prayer, quite likely to some unseen power rather than to the effigy itself. Then, as if in recognition of this offering, the head of the snake, quivering, seems to rise of itself slowly to the center of the opening in the gourd. At this point, it seems to give vent to four short melodious roars, after which it again subsides to its former position. Following this may be heard a scraping sound, then all is quiet. Thereafter, each chief follows the example of the priest with a like result.

At this point, the public nature of the ceremony seems completed, for all the uninitiated spectators leave the kiva. The intensely dramatic conflict taking place at this juncture is for the most part private, only the Moñkiva members constituting any sort of fixed audience. One chief, wearing the mask and bearing the sun-shield characteristic of his kiva, advances and declaims in a half chant, rising to a shriek at intervals. During this recital he draws back to the fire-place and then shuffles slowly toward the *sípapû,* an opening in the floor symbolizing the original opening in the center of the earth through which the Katcinas came with the Indians. At this point, the Moñkiva chief shouts loudly and the chief on the verge of the *sípapû* springs over that opening, after which all shout and sing in concert.

The associates of the chief now taking the leading part, dash down the ladder into the main room each bearing the sun-shield distinctive of his kiva. Each of the band presents his shield to his chief in military fashion. Then, except for the two members, novices likely, who stand facing each other against the north

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wall, bearing in the right hand a squash blossom and spruce twigs and in the left an ear of corn, the whole company engages in a frenzied dance in which the chief makes mad dashes among his associates, who, crouching, meets his assaults and drive him back to the *sípapû*. He swings his shield and dashes it from face to face, all in perfect unison, those so attacked pretending to snatch at it. The whole performance, highly suggestive of defense and attack, is kept up until those participating are overcome with heat and exhaustion, the chief shield-bearer alone triumphing.

So much for the dramatic spectacle. The rituals accompanying and accounting for the action remain obscure to the alien spectator. In view of this, perhaps it will not be amiss to note the salient features of Mr. Fewkes's purely theoretic interpretation. This assault of men upon the bearer of the sun-shield may be taken as a dramatization of the attacks of hostile powers upon the sun-god himself. The object of this act is perhaps to offset the malign influences or to overcome them through suggestion, for it will be remembered that the shield-bearer, though made to retreat to the *sípapû,* is never overcome by his assailants. All this is done to bring back the vegetation-fostering sun, lest he disappear forever as seems threatened by his southern decline. This probably constitutes the central motive of the entire enactment. But before this can be made effective, first must one of the oldest and most powerful of the sun's enemies be propitiated. It is on this account that prayers are said to the Plumed Snake. It is with this in view that meal offerings are made to the would-be devastator of the earth, should he succeed in banishing Táwa, the beneficent sun. When the Plumed Snake has been won over, then may the bearer of the symbolic sun-shield of Táwa assure, through successful fighting, the return of that good friend of man.

Paliiliikoñti

The Soyáluña exhibition does not, however, merit the consideration due some other Hopi ceremonials. The Paliiliikoñti, for

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example, presents a far more markedly dramatic show. The vaudeville-like performances, coming as a climax to this celebration, fulfill all the conditions attendant upon place, audience, and representative rôles.

The Paliiliikoñti or Plumed Snake ceremonial, occurring in March, has for its basic purpose the production of rain, the Plumed Snake being associated with lightning. Sympathetic magic is operative in the propitiatory treatment accorded the great serpent effigies, employed in the final dramatic performances. The suggestion of crop-producing rains is further emphasized upon this occasion in stage paraphernalia of various kinds; for instance, young shoots of corn. Each show constitutes in itself an independent unit, each being the product of a separate kiva. All, however, voice the central theme of the entire Paliiliikoñti observance, a desire for rain and subsequent crops, especially corn. An account of the first, the fourth, and the fifth acts, as presented in the various kivas on the East Mesa in 1890, will give an idea of the general nature of these dramatizations.[6]

One end of the kiva was arranged for seating the audience, the other side being reserved as stage space for the various transient companies of actors and their stage paraphernalia. The fireplace in the center of the room served as a dividing line as well as the source of illumination. The fire-tenders, too, performed a double function. Their primary duty was to replenish the fire, thereby providing general light for the room or foot-lights as the occasion demanded. Their secondary duty was that of official curtain. When scene-shifting was under way, the two fire-tenders created temporary darkness by shutting off all light with their robes. When all was in readiness for the exhibition, at a given signal the robes were dropped and the stage setting and actors were revealed. With this introduction to the theater, the management of the theater, and the audience, the shows themselves may be brought on.

[6] See 21st *A. R. B. E.*, Washington, 1912. *Proc. Acad. Sci.*, December; 1900; "The Palulakonti: A Tusayan Ceremony," *Journ. Am. Folk Lore*, 1893.

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Act I

The arrival of the first band of Katcina impersonators was announced by strange cries from the hatchway. After repeated summons from the fire-tenders to enter, the actors descended the ladder, in the protecting darkness afforded them by the fire-tenders in their capacity of curtain, and set up their scenic effects. When all was in readiness, the fire-tenders dropped their robes, so revealing to the audience a miniature cornfield against a cloth screen background extending from the floor almost to the rafters. On this were many strange devices, most prominent among which were six large disks encircled by corn husk wreaths and decorated with symbolic pictures of the sun. On other parts of the screen were many symbols of the male and female elements in nature, ranging from birds to human beings together with symbols of rain clouds, lightning, and falling rain. In the foreground on each side of the screen were men representing bear Katcinas in ceremonial kilts, one of whom was dressed to represent a woman. The latter bore in one hand a basket tray of meal and in the other an ear of corn. He wore a black helmet in which were cut small crescent-shaped eyes. On each side of the face coils of hair were suspended and over the forehead hung red horsehair bangs. From the top of the mask protruded a bunch of feathers. This was an impersonation of Hahaiwüpti, mother of Katcinas.

The act began with a song to the rhythm of which all except Hahaiwüpti danced. While this song was still in progress, a hoarse roar was heard from behind the screen, and shortly thereafter the disks swung open and out of the orifices protruded the heads of six great serpent effigies—goggle eyes, a fan-shaped crest of hawk feathers, and a mouth with prominent teeth from which hung a red leather tongue. The bodies, thrust slowly into view, were black on the back and white on the under side. When they were fully extended, the song grew louder and faster. The effigies, swaying to the rhythm, seemed to bite at each other and to make frequent darts towards the men near the screen. Then the heads of the serpents suddenly turned towards the floor and in an instant the effigies had swept across the imitation cornfield, over-

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turning the little clay pedestals to which the corn shoots were attached. After this all six serpents raised their heads and wagged them back and forth, roaring continually in spite of all Hahaiwüpti's efforts to appease them. In the audience as on the stage, wild excitement prevailed. Some of the spectators threw meal at the effigies, others said prayers, others shouted aimlessly.

At length the song diminished in volume, the effigies disappeared through their respective orifices, the sun disks fell into place, and, after one final roar from behind the screen, all was quiet. The miniature corn stalks were distributed in the audience, after which the actors packed up their possessions, in the semi-darkness provided by the fire-tenders, and set out for the next kiva where they were to repeat this self-same act.

Act IV

Again strange cries were heard from the hatchway and again the fire-tenders found it necessary several times to bid the visitors enter. At length, there came down the ladder a man wearing a mask covered with vertical zigzag lines. On his back he carried a bundle which seemed to be very heavy for he pretended to slip on every rung of the ladder as he descended When he finally reached the floor he opened the bundle and displayed a metate and meal-grinding stone. These he arranged before the fire-place and then seated himself to one side. Another man followed similarly laden, and disposed of the contents of his bundle in like manner, seating himself upon the opposite side. Now came two masked girls elaborately dressed in white ceremonial blankets and knelt before the grinding stones in the attitude of those about to grind corn. At this point a chorus of masked men entered and took their places behind the girls. Then, to the rhythm of a solemn dance, the men began to sing, further complicating the rhythm by clapping their hands. Meanwhile, swaying their bodies to the basic rhythm of the song, the girls ground corn.

When this scene was completed, the young men in the rôle of brothers to the girls grinding corn, carried on an animated conversation with the fire-tenders relative to the reputation of the

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girls as grinders. By way of convincing both the fire-tenders and even certain members of the audience of the truth of their statements, the chorus presented them with pinches of meal to taste.

At the conclusion of this episode, the girls performed a graceful dance in the middle of the room, extending alternately their hands in which they carried ears of corn.[7]

Act V

The general scenic features of this act were similar to those already described in the first act, the main difference being the wooden background decorated with turkey feathers and providing only two sun disks. Pine boughs filled the spaces at the sides of the screen, serving to conceal the manipulators of the serpent effigies. The *dramatis personae* of this act were, however, entirely different from those referred to in the first act. These actors are to be designated as "mud-heads," intended to be ridiculous figures and to play undignified parts. Except for the mask of closely fitting cloth with a knob over each ear, slits for eyes and nose, and a doughtnut-like protrusion for a mouth, each actor was naked. This show, too, began with roars from behind the screen, after which the two great serpents made their appearance much in the same manner as did the six in Act I. Once in the foreground, they entered into conflicts with the mud-heads whom they always succeeded in overcoming, symbolic of the struggle of man, an ignoble being, with the supernatural power represented by the Great Snake.

This is enough to demonstrate that the Hopi are capable of producing at least semi-secular dramatic performances. Each act stands for a number of rehearsals with a view to public presentation. Each show gives striking evidence of the existence of a certain kind of text upon which the exhibition is based. Even more than the Soyáluña dramatization, the three acts paraphrased from the Paliiliikoñti exhibition demonstrate that the Hopi dra-

[7] Rôle of these girls suggestive of corn maidens in Zuñi mythology. See 23d *A. R. B. E.*, Washington, 1905.

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matic conception has progressed beyond the choral stage. The specific character impersonation of the mother of Katcinas is proof of this. And a further instance of the requisites of the secular drama is found in the dialogue between the chorus of young men in Act IV and the fire-tenders. Nor does this exhaust the claims to recognition from a dramatic standpoint. The pervading atmosphere of religious terror in Act I may be compared with that of Greek tragedy; or, barring the religious element, it is certainly suggestive of opera. Greatly tempered in the still more or less serious representations of Act IV, this tragic atmosphere is finally reduced almost to the comic in the mud-head performance of Act V. Again, in both the Soyáluña and Paliilii-koñti ceremonials, the presence of the altar—represented in the latter by the symbolic screen—calls to mind a similar characteristic of the classic Greek stage. And the further analogy of conventional masks and costumes, entirely different though the Indian conventions are from the Greek, nevertheless stimulates a desire to follow out a more detailed comparison of the developed drama of that cultured people with the crude beginnings of drama among this savage folk. Such an investigation, it seems, could but confirm the dramatic promise of certain pueblo ceremonials.

A Navajo Performance

A contrast to the general or communal pueblo ceremonials may be found in "The Mountain Chant" of the pueblo-influenced Navajo. Upon the last night of this protracted medicine ceremonial, instituted for the "cure" of an individual member of the tribe, occurs a dramatic pageant of no mean proportions. In spite of the distinctly individual cast of the celebration as a whole, the performances taking place upon this last night, bear the stamp of a wide-spread festal occasion, involving at least representatives from many other tribes. Those making up the audience bring all the holiday freshness of spirit that the Greeks did upon similar occasions of great dramatic interest. Over all is the powerful element of religion, superstition or whatever you choose to call that profound supernatural influence basic to intense love of action, of

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story, and above all of mystery. In this respect, the savage perhaps differs from the more sophisticated Greek almost as much as do the respective times chosen for their great festivals of this sort. The Greek developed tragedy was presented in all the clarity of day; the Navajo acted legend occurs at night with all the possibilities of mystery and magic which darkness affords. The Navajo is still a savage with the full quota of wild savage love of color, of riotous music, and above everything else of action. He must see, hear, and feel the *story*. That is the main thing. He is not yet ready for calm philosophizing. To him the universe *is* and he would see and see again *how* it came to be so, not *why*. Hence it may be of interest to parallel sections of the legend with the acted representations. Artistotle's *unity of action* is an unheard of, an unrealizable dictum in the Navajo *unity of man* principle of dramatic composition. It is the various episodes in the supernatural experiences of their great medicine prophet Dsilyi' Neyáni that they come to see upon the last night of "The Mountain Chant." There is but little coherence, much less unity, existing between the many strange legendary exhibitions, a veritable string of almost unrelated events. But "the play's the thing."

At nightfall the theater is constructed—ceremonially, it must be remembered, for religion is back of all this celebration, a religion almost top-heavy with symbolism and magic. In the center of the open space there has been previously heaped a great pile of dry juniper and cedar wood. Along the circumference of this great circle the men and boys construct the mystic enclosure with heaps of branches, while, to a rattle accompaniment, the old chanter sings the essential song. This completed, the place of exhibition becomes *sacred ground* which can be entered only through an opening facing the east. Through this sole gateway the audience file with their temporary camping outfits and establish themselves next to the branch enclosure. This is the human audience. Outside the fence is the supernatural audience—the spirits of bears, for instance, and various other ancestral gods. No human being dares encroach upon this privileged space.

When the spectators are settled and it is well dark, the band of

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musicians whose business it is to furnish the emotional atmosphere throughout the entire series of performances, enter and take their places near the outer edge of the enclosure towards the west. As they begin to play, the great fire in the center is lighted and the exhibition is at hand—a series of shows, which, according to Dr. Matthews[8] whose account is employed, hold the attention and even intense interest of white man and Indian alike.

"The Mountain Chant"

Mythological Basis

This exhibition is not founded upon any immediate experience of or revelation to the prophet Dsilyi' Neyáni (Reared-within-the-Mountain) during his sojourn among the *cigíni* (supernatural beings), but was introduced by a stranger tribe of guests from the south present at the first great Mountain Chant inaugurated by the Navajo *shaman* or medicine man upon the return of the prophet, for the sake of further "purifying" him that he might no longer find "the odors of the lodge . . . intolerable." Hence, the Mountain Chant was not originated by the prophet, a "healing dance within the dark corral" having long been practised. But it was "imperfect" and needed the supplements Dsilyi' Neyáni was prepared to give from his revelations to render it "the great dance it is now among the Navajo." The dance described in the opposite column has, it is seen, no direct bearing upon the "rites of the dark circle" and yet it is probably never omitted.

Dramatic Representation

First Dance

"When the fire gave out its most intense heat, a warning whistle was heard in the outer darkness, and a dozen forms, lithe and lean, dressed only in the narrow white breechcloth and moccasins, and daubed with white earth until they seemed a group of living marbles, came bounding through the entrance, yelping like wolves and slowly moving around the fire. As they advanced in single file they threw their bodies into divers attitudes—some graceful, some strained and difficult, some menacing. Now they faced the east, now the south, the west, the north, bearing aloft their slender wands tipped with eagle down. . . . Their course around the fire was to the left, that is, from the east to the west by way of the south and back again to the east by way of the north (a course taken by all the dancers of the night, the order never being reversed). When they had encircled the fire twice, they began to thrust their wands toward it, and it soon became evident that their object was to burn off the tips of eagle down; but, owing to the intensity of the heat, it was difficult to accomplish this, or at least they acted well the part of striving against such difficulty. . . . Many were the unsuccessful attempts; but, at length one by one,

[8] See 5th *A. R. B. E.*, Washington, 1883–1884. For "Original Texts and Translations of Songs," see p. 455.

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To know the reason for the type of costuming employed in this *alili* or show, it is necessary to recall the juncture in Dsilyi' Neyáni's supernatural experiences where the Butterfly woman cleansed the Navajo and adorned him in such manner "as the akáninili . . . is painted and ornamented to this day"—all preparatory to his visits to the abodes of the divine ones.

Speaking of the prophet and his supernatural guide, the myth relates, "They went to 'Valley-Surrounded-on-All-Sides-by-Hills' . . . where they found the house of the 'Holy Young Men,' of whom there were four. . . . A number of plumed arrows were hanging on the walls, and each young man (one standing in the east, one in the south, one in the west, and one in the north) held such an arrow in his extended right hand. . . . He [Dsilyi' Neyáni] was bidden to observe well how the holy young warriors stood, that he might imitate them in the rites he should establish amongst men."

And later—"They journeyed to 'Broad Cherry Trees,' where in a house of cherries with a door of lightning, there lived four gods named . . . 'Reared-within-the Mountains' [the Prophet's patron gods, so to speak, in whose form the Butterfly Woman had recently molded him]. . . . Each held an arrow made of the cliff rose in his extended right hand. The head of the arrow was of stone, the fletching of eagle feathers, and the 'breath feather' of the downy plume of the Tsenáhale (Harpy of Navajo mythology). As they held the arrows they ejaculated, '*ai, ai, ai, ai,*' they all succeeded in burning the downy balls from the ends of their wands. As each accomplished this feat, it became his next duty to restore the ball of down [a juggler's trick]. When he succeeded, he held his wand up in triumph, yelped and rushed out of the corral."

Second Dance

"After an interval of three quarters of an hour, the dance of the *ḳátso-yisçàn,* the great plumed arrow, the potent healing ceremony of the night, began. There were but two performers. They were dressed and arrayed like the *akáninili* ['meal sprinkler' frequently acting in the capacity of sacred messenger], but they bore no meal bags, wore no beaver collars and the parts of their bodies that were not painted black—legs and forearms—were daubed with white earth. Instead of the wand of the *akáninili,* each bore in his hand one of the great plumed arrows. While they were making the usual circuits around the fire, the patient was placed, sitting on a buffalo robe in front of the orchestra. They halted before the patient; each dancer seized his arrow between his thumb and fore-finger about eight inches from the tip, held the arrow up to view, giving a coyote-like yelp, as if to say, 'So far will I swallow it' and then appeared to thrust the arrow slowly and painfully down his throat as far as indicated. While the arrows seemed still to be stuck in their throats, they danced a 'chassé, right and left' with short, shuffling steps. Then they withdrew the arrows, and held them up to view as before with triumphant yelps, as if to say, 'So far have I swallowed it.' Sympathizers in the audience yelped in response. The next thing to be done was to apply the arrows to various parts of the patient's body. . . . This finished, the sick man and the buffalo robe were removed. The bear-

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. . . and, after the fourth *ai,* each one swallowed his arrow, head foremost, until the fletching touched his lips. Then he withdrew the arrow and they said, 'Thus do we wish the Navajo to do in the dance which you will teach them; but they must take good care not to break off the arrow-heads when they swallow and withdraw them.'"

In this dance is represented, in the person of the Yày-bi-chy, one of the premonitory experiences of the prophet Dsilyi' Neyáni during his captivity in a hostile Ute tribe, some time previous to his actual visits to the various abodes of the "divine ones." To quote from Dr. Matthew's record of the myth: "The pipes were lit and the council began. The talking in the strange tongue that he could not understand lasted long into the night, when he fancied that he heard the voice of the Yày-bi-chy above the din of the human voices, saying *'hu' hu' hu' hu'* ' in the far distance. He strained his attention and listened well and after awhile he felt certain that he heard the voice again nearer and louder. It was not long until the cry was repeated for the third time, and soon after the captive heard it once more loudly and distinctly, immediately to the west of the lodge. Then there was a sound as of footsteps at the door, and the white lightning entered at the smoke-hole and circled around the lodge, hanging over the heads of the council. But the Ute heard not the voice which the Navajo heard and saw not the vision he beheld. Soon the Yày-bi-chy entered the lodge and standing on the white lightning said: 'What is the matter with you, my grandchild? You take no thought about anything. Something you must do for yourself, or else, in the morning you will be whipped to death—that is what the council has decided.' Then the Yày-bi-chy ers of the arrows danced once more around the fire and departed."

"Meanwhile in the songs of this rite, there is frequent reference to the plumed arrow [a most revered implement]. . . . All the other shows may be omitted at will, but this, it is said, must never be neglected."

Third Dance

"At 10 o'clock the sound of the whistle again called the spectators to attention and a line of twenty-three dancers came in sight. The one who led the procession bore in his hand a whizzer such as schoolboys use. . . . This he constantly whirled, producing a sound like that of a rain storm. After him came one who represented a character, . . . the Yàybichy, from the great nine days' ceremony of . . . the night chant, and he wore a blue buckskin mask that belongs to the character referred to. From time to time he gave the peculiar hoot or call of the Yàybichy, *'hu', hu', hu', hu'.'* After him followed eight wand-bearers. They were dressed like the bearers of the great plumed arrows; but instead of an arrow each bore a wand made of grass, cactus, and eagle plumes. The rest of the band were choristers in ordinary dress. As they were all proceeding around the fire for the fourth time, they halted in the west, the choristers sat and the wand-bearers formed a double row of four. Then the Yàybichy began to hoot, the orchestra to play, the choristers to sing, the whizzer to make his mimic storm, and the wand-bearers to dance. The latter keeping perfect time with the orchestra, went through a series of figures not unlike those of the modern quadrille. . . . When several of these evolutions had been performed in a graceful and orderly manner, the choristers rose, and all went singing out at the east."

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gave the Navajo instructions as to how to escape and what valuable things to steal to take with him. Soon after this a sleep-bringing bird entered the lodge through the smoke-hole, hovering over the heads of the Ute. In a short time all were asleep, even the watch dogs, and the Navajo was free to carry out the instructions of the Yày-bi-chy and so begin the long series of trials and supernatural experiences."

There is one current myth which accounts for the origin of this dance in the following manner: "When Dsilyi' Neyáni visited the mountain of Bistcàgi, the home of *Estàn Cigini* (Holy Women), these divine beings had for ornaments on their walls the sun and the moon. When the great mythic dance was given they were among the guests. They brought their wall decorations, and when the time for their *alili* came, they wore the sun and the moon on their backs when they danced."

Fifth Dance

"It was after midnight when the blowing of a hoarse buffalo horn announced the approach of those who were to perform . . . the *tcòhanoai alili* or sun-show. There were twenty-four choristers and a rattler. There were two character dancers, who were arrayed . . . in little clothing and much paint. Their heads and arms were adorned with plumes of the war eagle, their necks with rich necklaces of genuine coral, their waists with valuable silver studded belts, and their loins with bright sashes of crimson silk. One bore on his back a round disk, nine inches in diameter, decorated with radiating eagle plumes to represent the sun. The other carried a disk, six and a half inches in diameter, similarly ornamented, to symbolize the moon. Each bore a skeleton wand of reeds that reminded one of the frame of a great kite; it was ornamented with pendant eagle plumes that swayed with every motion of the dancer. While the whole party was passing round the fire in the usual manner, wands were waved and heads bowed towards the flames. When it stopped in the west, the choristers sat and sang and the rattler stood and rattled while the bearers of the sun and moon danced at a lively rate for just three minutes. Then the choristers rose and they all sang and danced themselves out of sight."

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The definite origin of this dance was not found recorded, though its presence in the modern exhibition may be accounted for in like manner as was the first dance, namely, an introduction by stranger guests, human or supernatural, at the first great mythic mountain chant, the one inaugurated for the sake of curing the prophet Dsilyi' Neyáni of his distaste for certain human conditions.

Ninth Dance

"It was after 1 o'clock in the morning when the dance of the *hoshkàwn* (*Yucca baccata*) began. The ceremony was conducted in the first part by twenty-two persons in ordinary dress. One bore, exposed to view, a natural root of yucca, crowned with its cluster of root leaves. . . . The rest bore in their hands wands of piñon. . . . On their third journey around the fire they halted in the west and formed a close circle for the purpose of concealing their operations. . . . After a minute spent in singing and many repetitions of '*Thohay*' [Stand], the circle opened, disclosing to our view the yucca root planted in the sand. Again the circle closed; again the song, the rattle, and the chorus of '*Thohay*' were heard, and when the circle was opened the second time an excellent counterfeit of a small budding flower stalk was seen amid the fascicle of leaves. A third time the dancers formed their ring of occultation. After the song and din had continued for a few seconds, the circle parted for the third time, when, all out of season, the great panicle of creamy yucca flowers gleamed in the fire-light. The previous transformations of the yucca had been greeted with shouts and laughter; the blossoms were hailed with storms of applause. For the fourth and last time the circle closed, and when again it opened the blossoms had disappeared and the great, dark green fruit hung in abundance from the pedicels. When the last transformation was completed, the dancers went once more around the fire and departed, leaving the fruitful yucca behind them.

"In a moment after they had disappeared the form of one personating an aged, stupid, short-sighted, decrepit man was seen to emerge slowly from among the crowd of spectators in the east.

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> He was dressed in an old and woefully ragged suit and wore a high, pointed hat. His face was whitened and he bore a short crooked, wooden bow and a few crooked, ill-made arrows. His mere appearance provoked the stoic audience to screams of laughter, and his subsequent 'low comedy business' . . . failed not to meet with uproarious demonstrations of approval. Slowly advancing as he enacted his part, he in time reached the place where the yucca stood, and in his imbecile totterings, he at length stumbled on the plant and pretended to have his flesh lacerated by the sharp leaves. He gave a tremulous cry of pain, rubbed saliva on the part supposed to be wounded, and muttered his complaints in a weak and shaking voice. . . . At length, kneeling on the ground, with his face buried in the leaves, he feigned to discover it and rejoiced with querulous extravagance over his success. When he had marked the spot and the way back to it with an exaggerated burlesque of the Indian methods of doing things, he went off to find his 'old woman' . . . to pick the fruit. Soon he returned with a stalwart man, dressed to represent a hideous, absurd looking old granny," who played a skillful part in the somewhat coarse "low comedy" following.

Thus, at intervals, show followed show throughout the night, the fire-dance or fire-play coming as a culmination to the various exhibitions when the fire was fast dying out and the dawn was on the verge of breaking—"the most picturesque and startling of all," Dr. Matthews declares. But the *alilis* cited will suffice to illustrate how, out of the complexes of religious practices, definite dramatic conventions emerge. There is a certain conformity of dress to long-established rules, especially among the character impersonators; for instance, the paraphernalia of the actors in the Second Dance, the blue buck-skin mask of the Yàybichy in the Third Dance, the sun and moon disks worn by those playing the

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parts of the Estsàn Cigìni in the Fifth Dance. A sort of text is discernible in the conscientious attempt on the part of those presenting a show to adhere to long-established order of action in concert with perhaps even more accurately reproduced song accompaniment. The action itself, however, is not iron bound. There may be detected certain individual interpretations and innovations, the recognized license of every dramatic impersonator.

In these acted legends the greatest emphasis should be laid upon the Navajo's unmistakable employment of definite character parts. The moment the story side of the legend is lost sight of, in the objective, impersonal sense, and the moment the distinctly personal religious zeal and enthusiasm is lost sight of in the objectified, impersonal acting of a rôle, that moment the epic and lyric ingrains of a people's rudimentary literary consciousness is welded in the mean of dramatic expression. This stage has probably long been established among the Navajo as well as among the pueblo tribes. In serious performances the characters selected for impersonation, like the Greek characters in tragedy, are derived, not from the common ranks of men, but from gods or god-favored men. The deeds of this nobler typer of beings alone inspired the Indian audience. Thus, in the two *akáninilis* of the Second Dance may be discerned the semi-divine Dsilyi' Neyáni himself with one of his affiliated gods—one of those in whose likeness the Butterfly Woman molded the prophet. And in the strange actions and call of the Yàybichy may be recognized the personality of the good supernatural friend and guide of Dsilyi' Neyáni during his long series of hardships. In the Fifth Dance, nothing short of gods themselves, with little of the man occasioned interest such as is found in the Yàybichy is exhibited to the spectators in the rôles of the Estsàn Cigìni.

These are some of the characteristics of the serious drama present in Navajo exhibitions. But the Navajo, as well as the Hopi, had not only achieved a certain perfection in representations of this nature, but they had also progressed sufficiently beyond the sombre and awe-inspired stage of religious domination to allow of secular relaxation in the midst of the serious. The bit of low

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comedy Dr. Matthews described in part, coming at the close of the Ninth Dance, demonstrates this. It does not take a great reach of the imagination to recognize in this scene parts analogous to the rôles of Launcelot and Gobbo in the otherwise more or less tragic atmosphere of "The Merchant of Venice."

GREAT PLAINS RITUAL PERFORMANCES

From the more developed representations of pueblo peoples—developed, that is, from the standpoint of theatrical technique, especially in regard to scenic effects and recognized impersonations—let us turn to the less highly colored, purely religion-dominated, ceremonial of the great plains tribes. They cannot compete with the pueblo tribes in general standard of living perhaps; yet for all their cruder wandering, hunting life, in the profound moments of their religious expression, these plains tribes seem to strike an even more genuinely dramatic chord. With them, however, the human audience is of an entirely different sort. Though present at most ceremonials of a tribal nature, the tangible audience is little considered by those performing. With the exception of a privileged few, many of the religious pageants take into account only a divine audience. The resulting element of mystery, however, would seen to hold the more firmly the unquestionably sympathetic band of human spectators, so strong is the common bond of tribe and of religion. Be it of distinctly communal or individual purport, so long as a religious performance bears the stamp of tribal interest, this audience is assured. Thus is guaranteed to the great plains performances one of the inalienable essentials of dramatic art.

In all such ceremonials, symbolic ritual prevails. This is true of the largely communal observances, such as the Hako of the Pawnee; it is likewise true of the individual rites, such as those observed among the Omaha. As will be seen upon investigation, each of these two sets of rituals come close to the soul of man of any race and of any time. Both pertain to the dearest pledge of all mankind—the child, the desire and the hope of the individual as well as of the whole tribe. "The relation of parent to child," Mr. Mooney affirms, "brings out all the highest traits of Indian

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character." Hence, the two great ceremonials referred to, general as they are in practice among plains and eastern woodland peoples, have been fixed upon for illustrative purposes. The Hako was a wide-spread observance among plains Indians, indeed, wherever agriculture had gained a foothold, and certain features of the Omaha "rites of the individual" were common to most plains and eastern woodland folk.

The Pawnee Hako[1]

The Hako, so called from certain of its sacred media, has a two-fold purpose: "First, to benefit certain individuals by bringing to them the promise of children, long life, and plenty; second, to affect the social relations of those who took part in it by establishing a bond between two distinct groups of persons belonging to different clans, gentes, or tribes, which was to insure between them friendship and peace." "The meaning flows from a fundamental human relationship, that of Father and Son, recognized in two forms, son-by-adoption and son-by-birth."

Such is the basic significance of the ceremonial as a whole, drawn from the Pawnee's conception of the universe and the relationship therein—the great and all-powerful Sky Father and the old and ever faithful Earth Mother, the Fathering Sun and the Corn Mother, upon all of whom the red men are as children dependent. In view of the universal significance, the Pawnee regulate the time of this observance—"in the spring, when the birds are mating," says the old Tahirussawichi, "or in the summer when the birds are nesting and caring for their young, or in the fall when the birds are flocking, but not in the winter when all things are asleep. With the Hako we are praying for the gift of life, of strength, of plenty, and of peace, so we must pray when life is stirring everywhere."

It is not necessary to follow up the details of the inauguration of the ceremonial and the period of symbolic preparation. Suffice

[1] According to the account obtained by Miss Fletcher from Tahirussawichi, a Pawnee priest and keeper of the Hako. See 22d *A. R. B. E.*, Part II, Washington, 1903. See, also, *Open Court,* 1913, Alexander, "The Mystery of Life."

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it to say that it is within the power of a prominent chief to institute the Hako. He becomes the Father, the leader of the Band of Fathers whom he selects. From another tribe he chooses a chief to represent the Son, who in turn gathers together a Band of Children of whom he is the leader. All are directed by the Kurahus or priest to whom has been intrusted the texts or methods of procedure during the entire ceremonial. He is assisted by acolytes to whom he is teaching the rituals, and attended by two medicine men. To translate these rôles in the terms of the classic Greek theater, the Kurahus, the director and ruling power of the whole production, would be recognized as the poet and chief actor; the two bands would be considered choric divisions, their separate leaders, by virtue of their prominence, being practically independent actors; the medicine men and acolytes, playing minor parts, would become servants and messengers. The old man and the child, introduced for the first time in the secret ceremony, like the Kurahus, play principal rôles. Not even the child, however, the central figure of the entire enactment, displaces the presiding priest in importance. Throughout, the Kurahus remains the protagonist.

In the first stage of the Hako, the complete cast is not to be found. Only the Father and his band, ever directed by the great high priest, take part, intently invoking the Son. Not until after the symbol-enriched journey of the Fathers to the home of the Sons is the complete *dramatis personae* realized. Now are met the necessary conditions for the central mystery, the dramatic enactment of the basic theme of the Hako.

At this point the two bands or choric divisions undergo the Greek complication of rôles, becoming at once both audience and actors. Indeed, they constitute the sole understanding audience, favored as they are by previous instruction and brought within a thoroughly sympathetic and appreciative mood through profound prayer. Now all is in readiness for the heart of the mystery; the sacred audience has been invoked and the human audience has been prepared.

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The Hako Mystery[4]

This dramatization, the last of the three parts into which the ceremonial falls, comprises four acts or episodes of an exclusive nature together with an interlude of a public, social nature. The latter, coming between the last two episodes, serves to lighten the over-serious business of tragedy.

The ritual constituting the initial episode, is made up of three parts or situations. In the first place the Fathers "go seeking their child." This symbolic journey is directed to the home of the Son, where his little son or daughter may be found to play the part of Child. In the second situation the Powers are summoned to the child and the sacra are brought near him symbolic of giving him life and of promising to him children. After the Fathers have sung, "Come and fear not, my child, all is well," the Child takes four steps forward, symbolic of the progress of life, while the Fathers sing, "I am ready; come, my child." In the concluding situation of this introductory act, the Fathers, singing, "Behold your father walking with the child," set out for the ceremonial lodge in company with the Child.

The next ritual develops this subject matter in four situations, all concerned with the ceremonial preparation of the Child for the climactic consecration which occurs in the third episode. All that is done now is concealed from the view of the warriors in the two bands, for the business of war is not compatible with these rites. First the Child is symbolically cleansed for future life by water "come from Tirawa-atius," the father of all things. Symbolism is further carried out in regard to the bowl containing this sacred water—it is "shaped like the dome of the sky." An old man "chosen because of age and favors from powers above" is delegated to perform this rite that the Child may receive like blessings. First he touches the Child with the sacred water symbolic of the Sky Father, then with grass as a symbol of Earth Mother, giver of food to all. After this the old man anoints the Child with a mixture of red clay and sacred animal fat. Next he

[4] For accompanying songs, etc., see 22d *A. R. B. E.*, Part II, pp. 201–260, 345–362.

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paints the Child's face with red paint, suggestive of the rising sun and symbolic of the vigor of life. This done, with blue paint he traces an arch about the forehead, the ends extending down each cheek, with a bridge across the nose—symbols of the arch of heaven and of the spirit paths from heaven to earth.

> "In these lines, we see the face of Tirawa-atius, giver of life and power to all things," says the old Tahirussawichi, later adding, "all who are to become leaders must be so painted."

In the last situation of this act, the old man fastens in the Child's hair, down from beneath the wing of the white eagle, suggestive of the breath and the life of the father of the child as well as of the breath of Tirawa-atius himself. Now the Child is told to look upon its reflection in the sacred water, running water being symbolic of a succession of generations. This done, a black covering is put over the Child's head—

> "that no one may look on the holy symbols. Only Tirawa-atius looks on them and knows all they mean. We do not look on them for they are holy."

In the third episode is reached the climax of the entire dramatic representation. First the Kurahus draws upon the ground a symbolic nest with his toe, thus imitating the eagle which builds its nest with its claws. There is, however, still greater significance in this act.

> "We are thinking of Tirawa making the world for the people to live in. . . . The circle . . . also represents the circle Tirawa-atius has made for the dwelling place of all the people."

Over this circle the Child is now held, its feet resting within the circumference. At this juncture an oriole's nest is secretly placed beneath the Child's feet, no one except the priest and the chief performing the act knowing what is being done under cover of the Child's robe. The oriole's nest is selected, because "Tirawa made the oriole build its nest so that no harm could come to it." Tobacco and bits of fat, "droppings that mark the trail made by

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hunters bringing meat home from the chase," are secretly placed in the nest. All this is to insure security and the good things of life not only to the Child, but to the whole generation which he represents.

> "The entire act means that the clan or tribe of the Son shall increase in peace and security in a land of fatness. This is the promise of Tirawa through the Hako."

A thank offering of sweet smoke brings this ritual to a close.

Now comes the public interlude, the part open to the intensely impressed, almost awe-stricken people outside. Before the lodge the two bands, that of the Fathers and that of the Sons, perform a dance of thanks to song accompaniment. After this, gifts are distributed, exploits are recounted and sometimes acted out among the people themselves. Especially are battles dramatized at this time. The whole occasion is one of festivity and of good fellowship, a genuine respite from the overcharged atmosphere of the serious rituals. It serves to reinstate the world of reality.

After this, the prominent members of the Band of Fathers and of the Band of Sons, return to the lodge for the formal conclusion of the mystery play. Behind the holy place in the ceremonial lodge, a song of blessing is sung over the Child:

> "All that I have been doing to you, little child, has been a prayer to call down the breath of Tirawa-atius to give you long life and strength and to teach you that you belong to him, that you are his child."

The Child is now unveiled, the symbolic paint removed and all the articles employed in the ceremony made into rolls to be presented to the Son. Then the Father addresses the Son. When he has finished speaking, he puts the bundle in the arms of the Child and leads it back to its father, the Son. The latter receives the offering, and "the child runs off to play." Shortly after this the Sons also withdraw and the Fathers are left alone to make a final distribution of gifts, the concluding feature of the entire Hako.

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Such is the substance of the Pawnee religious drama as embodied in the Hako. In frankly designating it a drama, we do not presume too much. The underlying theme is of universal significance. It is developed clearly and in a dramatically unified manner, growing steadily to a climax or turning point, the pure religious exaltation of which gives promise of the joyous calm achieved in the final act. In point of fact, the Hako mystery meets the basic requisites of the five act drama, for, after all, from the standpoint of dramatic technique, the public interlude itself is an organic part of the drama proper. Following the third ritual, it fulfills the true function of a fourth act, "the period of preparation," essential to any serious drama. The joyous nature of this public performance forestalls more definitely the happy ending, promised in the third ritual.

The Hako mystery presents by analogy a strange complex of the Shakespearean drama and the classic Greek tragedy. The impersonal nature of the subject matter is suggestive of both, though the concentrated nature of the situation is more indicative of the Greek. Again, the typically climactic nature of the third episode is characteristic of both the Greek and the Shakespearean drama. But the five stages of theme progress as designated by rituals, coincides with Shakespeare's dramatic form. The absolute attention to the unified development of abstract idea in action at the expense of any individual character development, points to the Greek way of doing things. The nature of the two choruses with their respective leaders, the scarcity of qualified actors would seem to establish this Greek analogy, were it not for the typically Shakespearean psychology evinced in the fourth act, in which man is brought back to earth and human relations reëstablished. The religious awe surrounding the central mystery of the oriole's nest is strongly suggestive of the atmosphere of awe and religious exaltation enshrouding the supernatural end of the Œdipus in Sophocles' "Œdipus at Colonos." It is not necessary to go back to the Eleusinean mysteries for this analogy. The Greek tragedy as a finished art affords it. The final act would seem to bear out this judgment, leaving the abiding calm and tranquility of a wholly clarifying and satisfying solution, such

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as the Greek tragedy produced, as did Shakespeare too in the last period of his writings. "We are always happy when we are with the Hako," says Tahirussawichi. Is it necessary to establish further the inherent dramatic significance of the central mystery in the Hako?

Omaha Rites Pertaining to the Individual

Closely allied to the *passion-purging,* soul-exalting effect of the Hako are the more distinctly individual ceremonials of the peace-loving Omaha.[5] Here, too, the child is the ruling motif, first as an infant of eight days, then as a child of three or more, and finally as a youth or maid.

Introduction of the Child to the Cosmos

Until its ritualistic recognition, the newborn babe was but an element of the universe "through the bond of the common life-giving power," with no human significance, with no tribal or gens connection. Not until eight days after its birth was the Omaha child formally introduced into the "teeming life of the universe." The priest, with whom this function was hereditary, having been summoned, took his stand at the door of the tent where the baby lay, and raising his hand palm outwards towards the sky, chanted in a loud tone a supplication to the "powers of the heavens, the air, and the earth" for the protection of the child, as it should travel "the rugged road, stretching over four hills"—infancy, youth, manhood, and old age. Here are sounded.

> "the emotions of the human soul, touched with the love of offspring, alone with the might of nature, and companioned only by the living creatures whose friendliness must be sought if life is to be secure on its journey."

Meanwhile, the baby life is further protected by a tiny hole cut in the sole of one of its first moccasins.

> "This is done in order that if a messenger from the spirit world should come and say to the child, 'I have come for you'; the

[5] See 27th *A. R. B. E.,* Washington, 1905–1906, pp. 119–128.

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child could answer, 'I cannot go on a journey—my moccasins are worn out!'"

And so the child is left free to grow, after its introduction to the universe, until it can walk steadily by itself. At this stage are enacted the dramatic rites in which the child is "symbolically sent into the midst of the winds" for further insurance of life and of health.

Introduction of the Child into the Tribe

At best the account of these rituals is incomplete. The greater part of what is recorded of the two secret mystery plays constituting this ceremonial comes from what a boyhood friend of Joseph La Flesche was able to hear and remember while hiding in the ceremonial tent. And yet what remains is worth considering.

In the spring, after the first thunders had been heard, when the grass was green and the meadow lark was singing, the herald went about the Húthuga (tribal circle), announcing that the time was at hand for the second set of childhood ceremonies. A tent was set up and made sacred, within which the prescribed rites were to be performed by priests whose hereditary duty it was. These secret performances were witnessed from the east-facing doorway by a company of intense spectators; for, having to do with the making of the child a distinctly human being with recognized name and place in gens and tribe, these ceremonials were of profound interest, not only to parents with children of the essential stage of development but to every true clansman and tribesman as well. The child, as the individual representative of tribal increase and prosperity, was of vital importance—hence, the human audience, hungrily gathering up what scraps they could from the two secret enactments, directed primarily to the god of Thunder, the controller of human life. Only for the little boy, however, were the two ceremonials performed, "The Turning of the Child" and "To-Cut-the-Hair." In the case of the little girls the second observance was omitted, for reasons that will be made clear later.

"Turning-the-Child"

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The mother and the father bring the little boy to the sacred tent. The mother leading him to the entrance thronged with spectators, is met by the priest whom she addresses:

> "Venerable man, I desire my child to wear moccasins." Then, as she presents the priest with gifts she has brought as fees, "I desire my child to walk long upon the earth; I desire him to be content with the light of many days. We seek your protection. We hold to you for strength."

Then the priest replies, addressing the child:

> "You shall reach the fourth hill sighing. You shall be bowed over; you shall have wrinkles, your staff shall bend under your weight. I speak to you that you may be strong." Then, with his hand on the child's shoulder, "What you have brought me shall not be lost to you; you shall live long and enjoy many possessions; your eyes shall be satisfied with many good things."

So concludes the introductory part of the ceremony, the only part fully comprehended by the onlookers. At this point the priest conducts the child, carrying his new moccasins, to the center of the tent where the mystery proper is enacted. A fire is burning here,

> "the flames typical of the life-giving power . . ., an aid toward insuring the capacity for a long, fruitful, and successful life in the tribe."

On the east side of the fireplace is a stone, emblematic of long life upon the earth and of the wisdom of age; to the west of the fireplace is a ball of grass, the symbolic meaning of which remains obscure.

When the priest reaches the fireplace, he assumes the rôle of the Thunder God, whose priest he is,—"I am a powerful being; I breathe from my lips over you." Then, as priest again, he sings the invocation to the Winds:

> "Ye four come hither and stand, near shall ye stand,
> In four groups shall ye stand,
> Here shall ye stand, in this place stand."
> (*The Thunder rolls.*)

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At the close of this song the priest faces the child towards the east. Then lifting the little boy by the shoulders, he holds him over the stone on which his feet are allowed to rest. Thus is begun the all-important act of turning the child from left to right, lifted by the shoulders each time and so faced south, then west, north, and back to the east during the singing of the ceremonial song:

"Turned by the winds goes the one I send yonder;
Yonder he goes who is whirled by the winds;
Goes where the four hills are standing;
There, in the midst of the winds do I send him,
Into the midst of the winds, standing there."

(*The Thunder rolls.*)

All this is performed with the greatest caution on the part of the priest. It is a period of intensely dramatic significance; for the audience is fully aware of the fatality of any flaw in the execution of this act. Should the child by any bad chance struggle and turn even a trifle in the wrong direction, all the spectators with one voice raise a cry of alarm. To them such an occurrence is as indicative of disaster as is the best wrought out climax in the art tragedy bodeful of the inevitable end, to an esthetic audience of civilized folk.

At the close of this scene, the priest puts the new whole moccasins on the child's feet, singing the while:

"Here unto you has been spoken the truth;
Because of this truth you shall stand.
Here declared is the truth.
Here in this place has been shown you the truth.
Therefore, arise! go forth in its strength!"

(*The Thunder rolls.*)

With the last verse the child is set on its feet and made to take four steps, symbolic of its entrance upon the journey of life. Its baby name is thrown away and its *nikie* (elk or buffalo, etc.) assumed. In conclusion, the priest instructs the child in regard to

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certain religious rites of his gens, which he must observe, together with the penalties attached to their violation.

Wé bashna or "To-Cut-the-Hair"

So ends the first ritual, but for the boy there is still another observance. Destined to become a warrior—and every Omaha man must fit himself to defend home and tribe—the boy's life is further consecrated to Thunder, as the god of war, by another priest whose special duty it is.

Leading the boy to the west side of the fire, the officiating priest faces him towards the east. He selects a lock of hair from the crown of the boy's head, ties it, and cuts it off, laying it away in a sacred case. As he performs this act, he sings,—

"Grandfather! far above on high,
The hair like a shadow passes before you.
Grandfather! far above on high,
Dark like a shadow the hair sweeps before you into the midst of your realm,"

The severing of the lock, a potent determiner of life and death in the Indian mind, implies the consecration of the boy's life to Thunder, the power controlling the warrior's destiny. Symbolically this hair-offering with all its vital significance is sent to the Thunder God, who in the following song is represented as accepting the life pledge to him and as declaring his determination to do with it as he pleases:

"What time I will, then only then,
A man lies dead, a gruesome thing,
What time I will, then suddenly
. . . . . etc.
Like a shadow dark the man shall lie,"

What else may occur before the final song, is not recorded. The concluding chant, however, is an invocation to the flames, the third of the cosmic forces according to the Omaha:

"Come hither, haste to help me,
Ye flames, ye flames, O come!

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O red-hot fire, hasten!
O haste, ye flames, to come.
. . . . . etc.
Come hither, haste to help me!"

The position and exact part played by the orchestra or chorus, as the case may be, remain obscure. Yet, fragments enough have been saved from the wreck of this drama-wrought religious observance to bear unmistakable marks of the great play of life and death, in which the responsibility-burdened child represents mankind. Each priest furnishes a dual dramatic character. At one moment he is the god himself, at the next, only the delegated representative of the god. He acts directly each rôle, speaking in the capacity of each character. Taken in connection with the sympathetic, if not wholly understanding audience, these internal features of mimetic action coupled with dialogue are sufficient to establish dramatic elements in these particular rites.

Introduction to Individual Life and to the Supernatural

Noń Zhin Zhon or "To-Stand-Sleeping"

In the third stage of individual rites, the Omaha youth was introduced "to the individual life and the supernatural." The consciousness of self, awakened at puberty, the time at which the mind of the child "becomes white," as the Omaha say, was closely associated with a consciousness of a highly spiritual, impersonal sort.

This rite also took place in the spring. But it allowed of no audience, that is no human audience; it provided for little specific impersonation. Strictly speaking, in itself, this ceremonial presents few dramatic features; yet, in the inviolable vows made during this rite, there are ingrained dramatic possibilities of profound nature. The rite itself is purely and intensely religious.

When he is "old enough to know sorrow," the Omaha youth with his face covered with soft clay, a symbol of humility, perhaps, sets out alone for the hills to enter upon a fasting vigil of four days. As he is leaving home, the youth's father puts into his hands

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a bow and arrow; but these he is forbidden to use, no matter how hungry he may become. Their function is to teach him the powerful lesson of endurance and self-restraint. During this time, he must pray for strength to Wakon da, "the great power," not to the lesser powers such as the sun, the moon, the stars, or the earth. This prayer is an "appeal for help throughout life."

> "You are to go forth to cry to Wakon' da—'Wakon' da! here, needy he stands and I am he,'" the Sacred Legend enjoins. "When on the hills, you shall not ask for any particular thing. The answer may not come to you as you expect; whatever is good, that may Wakon' da give."

At the end of the four days, as a final supplication, the youth must "wipe his tears with the palms of his hands and lift his wet hands to the sky, then lay them to the earth."

This much of the symbolic rôle, that must be played at least once by every Omaha youth and may be performed by any Omaha maid, is all that need be cited here. The fatal import of the sacred vow, made upon this occasion, constitutes its chief dramatic significance. Were an audience present at this realistically symbolic trial of man, a parallel might be drawn between it and the morality play of "Every Man." But this audience is not present. The vow, however, is made all the more terribly binding, perhaps, on account of the absence of human witnesses.

In the light of the Omaha rites of the individual, especially the consecration of the life of the boy to Thunder together with the later period of prayer and pledge on the lonely hills, turn to Miss Fletcher's account of "The Mother's Vow."[6] This is a Dakota story; but the close blood relation and common religious practices of the Omaha and the Dakota make this application entirely feasible.

"In the early part of the century a Dakota woman fasted and prayed, and Thunder came to her in her vision. To the god she promised to give her first-born child. When she became a mother she forgot in her joy that the life of her little one did not belong to her; nor did she recall her fateful vow until one bright spring day, when the clouds gathered

[6] See Fletcher, *Indian Story and Song from North America.*

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and she heard the roll of the thunder,—a sound which summoned all persons consecrated to this god to bring their offerings and to pay their vows. Then she remembered what she had promised; but her heart forbade her to lay the infant, which was smiling in her arms, upon the cloud-swept hill-top. She pressed the baby to her breast, and waited in silence the passing of the god in the storm.

"The following spring, when the first thunder pealed, she did not forget her vow; but she could not gather strength to fulfill it.

"Another year passed, and again the thunder sounded. Taking the toddling child by the hand, the mother climbed the hill; and, when the top was reached, she placed it on the ground and fled. But the boy scrambled up and ran after her, and his frightened cry stayed her feet. He caught her garments and clung to them; and although the thunder called, she could not obey. Her vow had been made before she knew the strength of a mother's love.

"Gathering the boy into her arms, she hid herself and him from the presence of the god. The storm passed, and the mother and child returned to the lodge; but fear had taken possession of her, and she watched her son with eyes in which terror and love struggled for the mastery.

"One day, as the little one played beside a rippling brook, laughing and singing in his glee, suddenly the clouds gathered, the flashing lightning and crashing thunder sent beast and bird to cover, and drove the mother out to find her child. She heard his voice above the fury of the storm, calling to her. As she neared the brook, a vivid flash blinded her eyes. For a moment she was stunned; but, recovering, she pushed on, only to be appalled by the sight that met her gaze. Her boy lay dead. The thunder god had claimed his own.

"No other children came to lighten the sorrow of the lonely woman; and every spring, when the first thunder sounded, and whenever the storm swept the land, this stricken woman climbed the hills, and there standing alone, facing the black rolling clouds, she sang her song of sorrow and of fealty:—

Edho he! [7]
"Behold! on their mighty pinions flying,
They come, the gods come once more
Sweeping o'er the land,
Sounding their call to me, to me their own.
Wa-gi-un![8] Ye on mighty pinions flying,
Look on me here, me your own,
Thinking on my vow
As ye return once more, Wa-gi-un!"

[7] Sighing vocables.
[8] Dakota term for the thunder bird.

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Could there be a more dramatic application of these sacred rites, a more absolute instance of tragedy, terrible and inevitable?

> "The essence of tragedy," Mr. Courteney[9] declares, "is always a conflict between a great law or power, universal or world wide in its scope, and the free will of the individual."

Such is the pitiable plight of the Dakota mother. On the one side comes the deep and irresistible call of a mother's love; on the other, the even more compelling demand of a divine power. The frail human resistance against this moral force is hopeless, utterly hopeless, yet that resistance must be made, so ingrained in the soul is parental love. The hapless Dakota mother is caught in the toils of fate quite as inextricably as ever was Antigone.

This dramatic material, grounded upon religious integrity, presents a typical Greek situation. The tragic incident, involving those "near and dear to one another,"[10] "through pity and fear effecting the proper purgation of these emotions,"[11] further establishes the Greek analogy. This theme is not suited to the less avowedly moral treatment of the romanticist. The grand, superhuman acceptance of the decree of fate, ringing out in the self-restraint-exalted song of the god-punished mother is indicative of a calm of the highest and most philosophical order. There is none of the complaint, none of the undying rebellion of the individual against divine ruling. No more is there the conciliatory note of the Christian heaven, where all is at last righted. In the truly Greek spirit, the inevitable is accepted, calmly and bravely, in full accord with moral order and there is an end to it.[12]

And yet, for all its Greek conception, M. Stopfer[13] would probably agree that Shakespeare's dramatic scheme[14] is best adapted to its development. Several years are involved in the plot, change of place is necessitated, and truly Shakespearean growth

[9] Courteney, *The Idea of Tragedy in Ancient and Modern Drama*, 1900.
[10] Aristotle's *Poetics*, XIV, Butcher translation.
[11] Aristotle's *Poetics*, VI, Butcher translation.
[12] See Frye, *Corneille: the Neo-classic Tragedy and the Greek*, Sec. II.
[13] Stopfer, *Shakespeare et les Tragiques Grecs.*
[14] Sherman, *What Is Shakespeare?* 1902.

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of character is needed to give this tragic material its greatest force. This need not, however, impair the all pervading spirit of Greek acceptance of divine ruling. From the fateful Thunder God's "What time I will . . . a man lies dead," etc., to the intensely religious calm of the desolate mother "thinking on her vow," the Æschylean moral order prevails.

* * *

By no means does this limited survey exhaust the dramatic possibilities of the pueblo, great plains, and eastern woodland religious ceremonials. The latter alone, for all their early contact with Christian peoples, retain not a few untainted religious practices of a dramatic nature. The various medicine societies,[1] perhaps the most widespread of all Indian institutions, afford an almost endless source of investigation. And closely allied to and compounded with the medicine cults, the far reaching religious festival called the Sun Dance[2] offers considerable dramatic material. Fundamentally a religious observance, it was also a social occasion for epic recitals of the glorious deeds of dead warriors and realistic enactments of by-gone battles, in which there was as patriotic assurance of race supremacy as the "Gorboduc" itself afforded. The dramatic enactment of battles was an important feature of the Omaha Sacred Pole[3] observance, at the ordination of which the people said:

> "Let us appoint a time when we shall again paint him [the Sacred Pole] and *act before him the battles we have fought.*"

That the same dramatic institution was characteristic of the Pawnee has already been seen in connection with the Hako. Even

[1] See 7th *A. R. B. E.*, Washington, 1892, "The Midéwiwin of the Ojibwa" and *Jour. Am. Folk Lore*, April–June, 1911, "The Ritual of the Winnebago Medicine Dance." etc.

[2] IV Anthrop. Series Field Columbian Mus., 1903, "Arapaho Sun Dance"; 11th *A. R. B. E.*, Washington, 1890, "A Study of Siouan Cults," p. 450.

[3] See 27th *A. R. B. E.*, Washington, 1906, p. 217.

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one of the latest religious cults, the Ghost Dance,[4] permeated with Christian lore, evinces much dramatic material purely Indian in conception. But further citations are not needed.

It is not to be maintained that every Indian ritual shows evidences of the high and of the noble, qualities beautiful and inspiring. Like certain Greek religious practices, Indian ceremonials are at times characterized by the base and the irreconcilably terrible. In Greek literary records, however, these features were, for the most part, ignored; and so should they be in the attempt to discover literary values in Indian rituals. As a judgment on life, life idealized and made worth living, literature should reflect the best thoughts, the best emotions of which a people is capable. Matthew Arnold[5] says:

> "The critical power . . . tends . . . to make the best ideas prevail." And again, the business of criticism is "*a disinterested endeavor to learn and propagate the best that is known and thought in the world,* and thus to establish a current of fresh and true ideas."

In following out this program, it is not necessary to fall into the common error of enthusiasts.

> "There is a curious tendency," Dr. Powell[6] remarks, "observable in students to overlook aboriginal vices and to exaggerate aboriginal virtues."

After all the Indian is merely a savage. The low and the base exist even in his religious practices, to be sure; yet towering far above these ignoble features are idealistic conceptions. In the end, it is the idealizations of which a people is capable, that survive, those finer thoughts that make possible the exalted life as distinguished from mere physical existence. Such literary quali-

[4] See 11th *A. R. B. E.*, Washington, 1890, "A Study of Siouan Cults," p. 484; 14th *A. R. B. E.*, Washington, 1896, "Ghost Dance Religion."

[5] Arnold, *On the Function of Criticism.*

[6] See 7th *A. R. B. E.*, Washington, 1886, "Indian Linguistic Families of North America."

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ties, from a dramatic standpoint at least, the pueblo and plains Indians possessed. Whether they could ever have embodied their crude material into any worthy literary form according to European standards, is another problem. Certainly the soul of a worthy literature shines through the beautiful poetic imagery of not a few of their religious dramatizations.

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